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UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

May 2001

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1A, 1B, 2A and 2B contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics (**Geopotential Height and Windspeed at 100 and 500 hPa**) for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.

TABLE 1A

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias| ≥ 4 hPa (pressure),
≥ 5 m s^{-1} (wind speed),
≥ 30 degrees (direction).

2.SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).

3.PGE ≥ 25

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

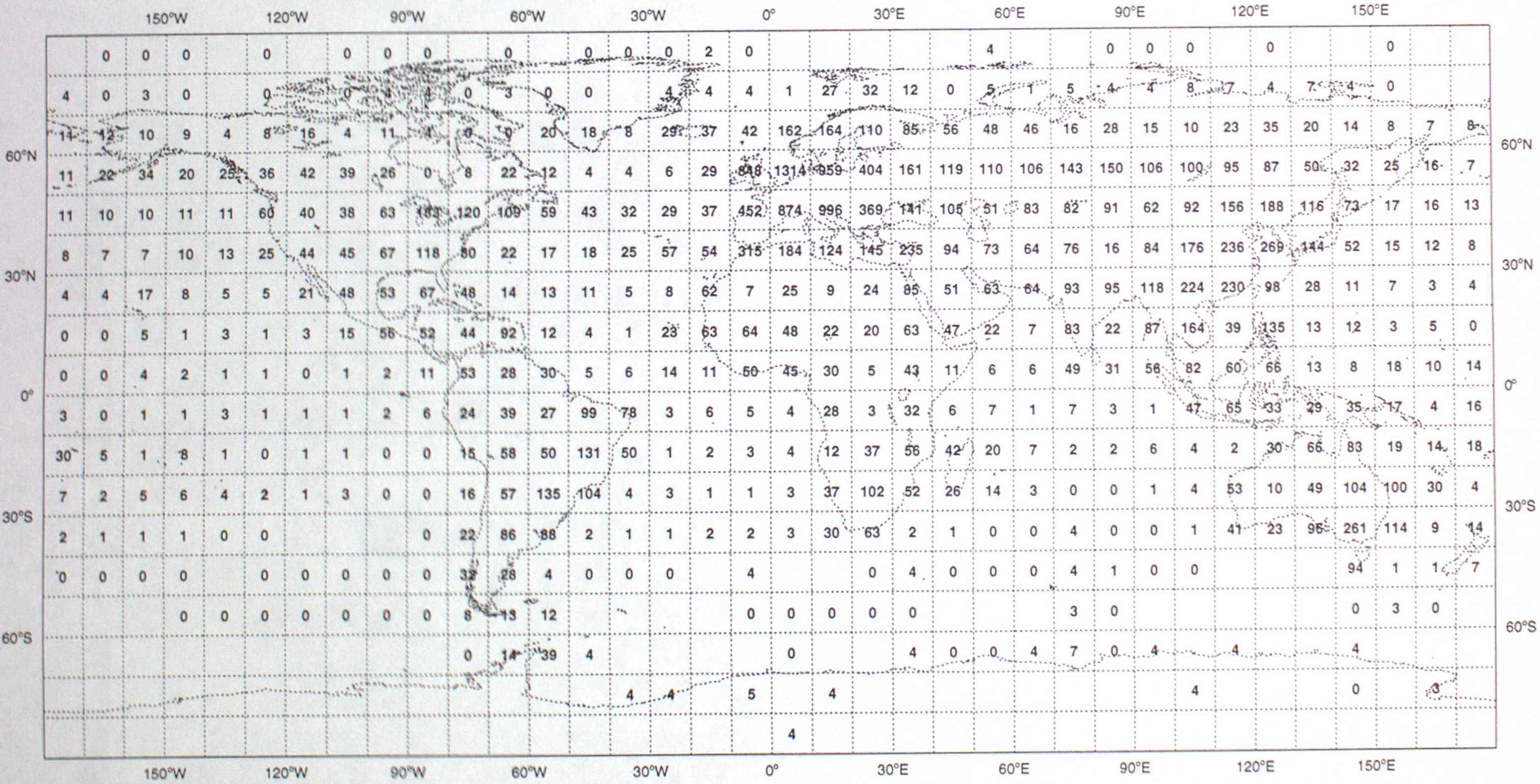
IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
ATZS	ALL	P	SUR	26	0	0	1.9	6.0	6.3
CGDS	ALL	P	SUR	181	84	46	0.7	-10.5	10.5
CG2960	ALL	P	SUR	177	137	77	3.3	1.0	3.5
C6FE6	ALL	P	SUR	25	0	0	0.9	5.3	5.3
C6FP2	ALL	P	SUR	34	0	0	2.6	8.4	8.8
C6PZ3	ALL	P	SUR	46	0	0	1.3	7.0	7.2
ELGG3	ALL	P	SUR	36	13	36	4.1	2.3	4.7
ELJL8	ALL	P	SUR	62	1	2	1.0	6.9	7.0
ELVY8	ALL	P	SUR	25	16	64	0.9	-3.9	4.0
ELWP2	ALL	P	SUR	25	0	0	1.0	-4.0	4.2
ELWR	ALL	P	SUR	60	1	2	1.4	-7.8	8.0
ELXV3	ALL	P	SUR	32	0	0	5.3	-5.9	7.9
H3EP	ALL	P	SUR	65	0	0	1.0	-7.2	7.3
KHRP	ALL	P	SUR	47	0	0	1.8	6.4	6.6
LAOW5	ALL	P	SUR	20	0	0	3.9	8.9	9.7
SK000	ALL	P	SUR	54	0	0	0.8	-5.2	5.2
SK002	ALL	P	SUR	20	1	5	6.7	1.6	6.9
UAIS	ALL	P	SUR	49	26	53	5.2	-7.8	9.4
UANF	ALL	P	SUR	33	0	0	1.3	-5.1	5.2
UCAC	ALL	P	SUR	39	0	0	1.1	8.4	8.5
UCJB	ALL	P	SUR	49	2	4	1.1	-4.1	4.3
UDYG	ALL	P	SUR	119	2	2	7.1	0.2	7.1
UHVW	ALL	P	SUR	30	0	0	2.9	5.9	6.5
VCJM	ALL	P	SUR	57	56	98	0.0	-9.6	9.6
VCRT	ALL	P	SUR	46	1	2	1.9	-5.1	5.4
VDWC	ALL	P	SUR	22	17	77	1.7	-5.4	5.6
WAZ9548	ALL	P	SUR	22	1	5	2.4	-8.6	8.9
WCV8696	ALL	P	SUR	22	0	0	1.5	-4.3	4.6
WCX8884	ALL	P	SUR	25	0	0	4.2	5.8	7.2
3FHF8	ALL	P	SUR	20	0	0	0.7	-4.3	4.4
62137	ALL	P	SUR	63	0	0	0.9	-6.6	6.7
62151	ALL	P	SUR	34	0	0	2.0	7.0	7.3
WIND SPEED									
C6NI3	ALL	SPEED	SUR	33	0	0	3.0	5.3	6.1
C6NR5	ALL	SPEED	SUR	32	1	3	5.1	12.2	13.2
DEHY	ALL	SPEED	SUR	51	21	41	3.4	2.1	4.0
DELYM6D	ALL	SPEED	SUR	37	1	3	5.4	5.2	7.5
DHDH	ALL	SPEED	SUR	58	0	0	5.5	5.0	7.4
DMRX	ALL	SPEED	SUR	42	0	0	6.6	5.7	8.7
ELNJ3	ALL	SPEED	SUR	27	0	0	3.8	5.0	6.3
ELVG2	ALL	SPEED	SUR	36	0	0	4.9	7.2	8.8
ELWP8	ALL	SPEED	SUR	46	0	0	6.5	8.8	11.0
ELWZ5	ALL	SPEED	SUR	30	0	0	4.3	5.1	6.7
ELXT8	ALL	SPEED	SUR	51	0	0	5.0	8.3	9.7
FKWK	ALL	SPEED	SUR	112	110	98	1.4	22.8	22.9
LAHG2	ALL	SPEED	SUR	20	0	0	3.8	5.3	6.5
LAVX4	ALL	SPEED	SUR	29	1	3	3.0	6.5	7.1
OWRN2	ALL	SPEED	SUR	30	0	0	4.3	8.1	9.2
OYCZ	ALL	SPEED	SUR	26	2	8	5.1	12.0	13.0
PJIB	ALL	SPEED	SUR	61	0	0	5.4	8.1	9.7
PPSO	ALL	SPEED	SUR	30	0	0	5.0	8.0	9.4
SCFI	ALL	SPEED	SUR	25	0	0	2.7	5.0	5.7
SXYY	ALL	SPEED	SUR	67	0	0	4.9	8.4	9.7
9KKF	ALL	SPEED	SUR	23	0	0	3.0	5.5	6.3

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND DIRECTION									
DGNB	ALL	DIRN.	SUR	282	0	0	98.6	-16.5	99.9
FKWK	ALL	DIRN.	SUR	112	110	98	11.5	44.1	45.6
FPSS	ALL	DIRN.	SUR	88	0	0	111.7	-13.9	112.5
LAFQ5	ALL	DIRN.	SUR	21	0	0	26.2	-30.4	40.1
NMRY	ALL	DIRN.	SUR	21	0	0	59.3	31.0	66.9
3FIQ6	ALL	DIRN.	SUR	20	0	0	36.6	37.1	52.1

Figure 1. SHIP/SYNOP mean daily count. MAY 2001

Main hours only

Global average number of observations in 24 hours = 21408



	0	0	0		0		0	0	0		0		0	0	0	2	0						4			0	0	0		0			0		
4	0	3	0		0		0	4	4	0	3	0	0		4	4	4	1	27	32	12	0	5	1	5	4	4	8	7	4	7	4	0		
14	12	10	9	4	8	16	4	11	4	0	0	20	18	8	29	37	42	162	164	110	85	56	48	46	16	28	15	10	23	35	20	14	8	7	8
11	22	34	20	25	36	42	39	26	0	8	22	12	4	4	6	29	848	1314	959	404	161	119	110	106	143	150	106	100	95	87	50	32	25	16	7
11	10	10	11	11	60	40	38	63	183	120	109	59	43	32	29	37	452	874	996	369	141	105	51	83	82	91	62	92	156	188	116	73	17	16	13
8	7	7	10	13	25	44	45	67	118	80	22	17	18	25	57	54	315	184	124	145	235	94	73	64	76	16	84	176	236	269	144	52	15	12	8
4	4	17	8	5	5	21	48	53	67	48	14	13	11	5	8	62	7	25	9	24	85	51	63	64	93	95	118	224	230	98	28	11	7	3	4
0	0	5	1	3	1	3	15	56	52	44	92	12	4	1	23	63	64	48	22	20	63	47	22	7	83	22	87	164	39	135	13	12	3	5	0
0	0	4	2	1	1	0	1	2	11	53	28	30	5	6	14	11	50	45	30	5	43	11	6	6	49	31	56	82	60	66	13	8	18	10	14
3	0	1	1	3	1	1	1	2	6	24	39	27	99	78	3	6	5	4	28	3	32	6	7	1	7	3	1	47	65	33	29	35	17	4	16
30	5	1	8	1	0	1	1	0	0	15	58	50	131	50	1	2	3	4	12	37	56	42	20	7	2	2	6	4	2	30	66	83	19	14	18
7	2	5	6	4	2	1	3	0	0	16	57	135	104	4	3	1	1	3	37	102	52	26	14	3	0	0	1	4	53	10	49	104	100	30	4
2	1	1	1	0	0				0	22	86	88	2	1	1	2	2	3	30	63	2	1	0	0	4	0	0	1	41	23	96	261	114	9	14
0	0	0	0		0	0	0	0	0	32	28	4	0	0	0		4			0	4	0	0	0	4	1	0	0				94	1	1	7
			0	0	0	0	0	0	0	8	13	12					0	0	0	0	0				3	0						0	3	0	
										0	14	39	4					0			4	0	0	4	7	0	4		4			4			
														4	4		5		4									4				0		3	
																		4																	

TABLE 1B

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :00, 06, 12, 18 UTC

Element monitored :Sea temperature (Degrees C).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :10 degrees

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias| ≥ 3 degrees

2.SD ≥ 5 degrees

3.PGE ≥ 25

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
SEA TEMPERATURE									
CFI9556	ALL	TS	SUR	38	0	0	0.8	4.2	4.2
CGDS	ALL	TS	SUR	167	4	2	2.3	6.4	6.9
CG2248	ALL	TS	SUR	63	63	100			
CG2960	ALL	TS	SUR	176	52	30	2.6	2.5	3.6
C6FD8	ALL	TS	SUR	29	0	0	0.8	-3.4	3.5
C6HS4	ALL	TS	SUR	21	0	0	1.9	-4.1	4.5
C6OM7	ALL	TS	SUR	26	0	0	2.6	-4.0	4.8
C6OQ8	ALL	TS	SUR	33	0	0	1.1	4.8	5.0
DBBX	ALL	TS	SUR	633	346	55	1.1	-0.3	1.1
EIQN	ALL	TS	SUR	467	285	61	0.7	0.4	0.8
ELGN6	ALL	TS	SUR	21	21	100			
ELJL8	ALL	TS	SUR	60	46	77	1.3	8.8	8.9
ELKU8	ALL	TS	SUR	21	1	5	0.9	3.7	3.9
ELPQ9	ALL	TS	SUR	84	0	0	0.8	4.1	4.2
ELQA8	ALL	TS	SUR	34	0	0	2.1	3.2	3.8
ELWB8	ALL	TS	SUR	21	0	0	1.6	-3.5	3.9
GXIC	ALL	TS	SUR	47	1	2	1.6	-5.0	5.2
KIOH	ALL	TS	SUR	24	0	0	2.4	-4.0	4.7
MVXQ8	ALL	TS	SUR	33	0	0	1.0	-4.0	4.1
PCQL	ALL	TS	SUR	27	0	0	0.4	-3.2	3.3
P3ZY6	ALL	TS	SUR	25	0	0	2.5	-3.0	3.9
SKFQ	ALL	TS	SUR	26	7	27	1.6	0.1	1.6
TSMS	ALL	TS	SUR	74	0	0	0.8	-3.5	3.6
UAIS	ALL	TS	SUR	35	0	0	1.2	-3.8	4.0
UBAW	ALL	TS	SUR	50	0	0	0.4	-7.8	7.8
UBSO	ALL	TS	SUR	36	1	3	1.7	3.2	3.6
UCUE	ALL	TS	SUR	20	18	90	0.0	-2.6	2.6
UCUP	ALL	TS	SUR	27	0	0	2.8	-4.2	5.0
WCW9126	ALL	TS	SUR	35	18	51	0.8	0.3	0.8
WMHL	ALL	TS	SUR	27	8	30	1.5	-3.0	3.3
WTEF	ALL	TS	SUR	69	39	57	0.6	-0.8	1.0
WUW2120	ALL	TS	SUR	30	14	47	2.0	2.6	3.3
WYP8657	ALL	TS	SUR	57	1	2	2.4	4.6	5.2
WZJD	ALL	TS	SUR	33	0	0	0.8	-3.5	3.6
3ECM7	ALL	TS	SUR	129	0	0	1.2	3.8	4.0
3FDV6	ALL	TS	SUR	23	0	0	1.0	4.1	4.2
44013	ALL	TS	SUR	738	0	0	1.1	3.0	3.2
44014	ALL	TS	SUR	737	0	0	1.0	-3.7	3.8
44137	ALL	TS	SUR	737	0	0	3.0	-3.0	4.2
45147	ALL	TS	SUR	575	575	100			
45151	ALL	TS	SUR	168	127	76	0.4	9.4	9.4
45152	ALL	TS	SUR	410	410	100			
45154	ALL	TS	SUR	325	2	1	0.8	3.8	3.9
46131	ALL	TS	SUR	735	735	100			
46146	ALL	TS	SUR	735	735	100			
46181	ALL	TS	SUR	734	734	100			

TABLE 2A

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa :25 m s^{-1}	(pressure) (vector wind)	
SELECTION CRITERIA :	NOBS	$\geq$ 20 , and one or more of the following:	
	1.|bias|	$\geq$ 4 hPa $\geq$ 5 m s^{-1} $\geq$ 30 degrees	(pressure), (wind speed), (direction).
	2.SD	$\geq$ 6 hPa $\geq$ 80 degrees	(pressure), (direction).
	3.PGE	$\geq$ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
31535	17.9	-71.3	ALL	P	SUR	932	545	58	7.3	-2.1	7.6
44724	33.0	-16.3	ALL	P	SUR	290	182	63	1.9	0.7	2.0
46561	29.0	-166.6	ALL	P	SUR	238	0	0	0.6	-4.7	4.7
48589	83.5	-121.2	ALL	P	SUR	358	206	58	0.3	0.0	0.4
WIND SPEED											
17557	-32.6	84.1	ALL	SPEED	SUR	699	0	0	2.2	-5.0	5.5
41502	24.7	-77.7	ALL	SPEED	SUR	34	0	0	1.9	-6.1	6.4
41639	22.9	-63.6	ALL	SPEED	SUR	224	1	0	4.0	6.6	7.7
62557	39.9	-11.7	ALL	SPEED	SUR	123	0	0	3.4	-9.2	9.8
WIND DIRECTION											
46710	36.7	-130.5	ALL	DIRN.	SUR	118	0	0	18.6	-36.0	40.5

Figure 2. DRIFTER mean daily count. MAY 2001

Main hours only

Global average number of observations in 24 hours = 9765

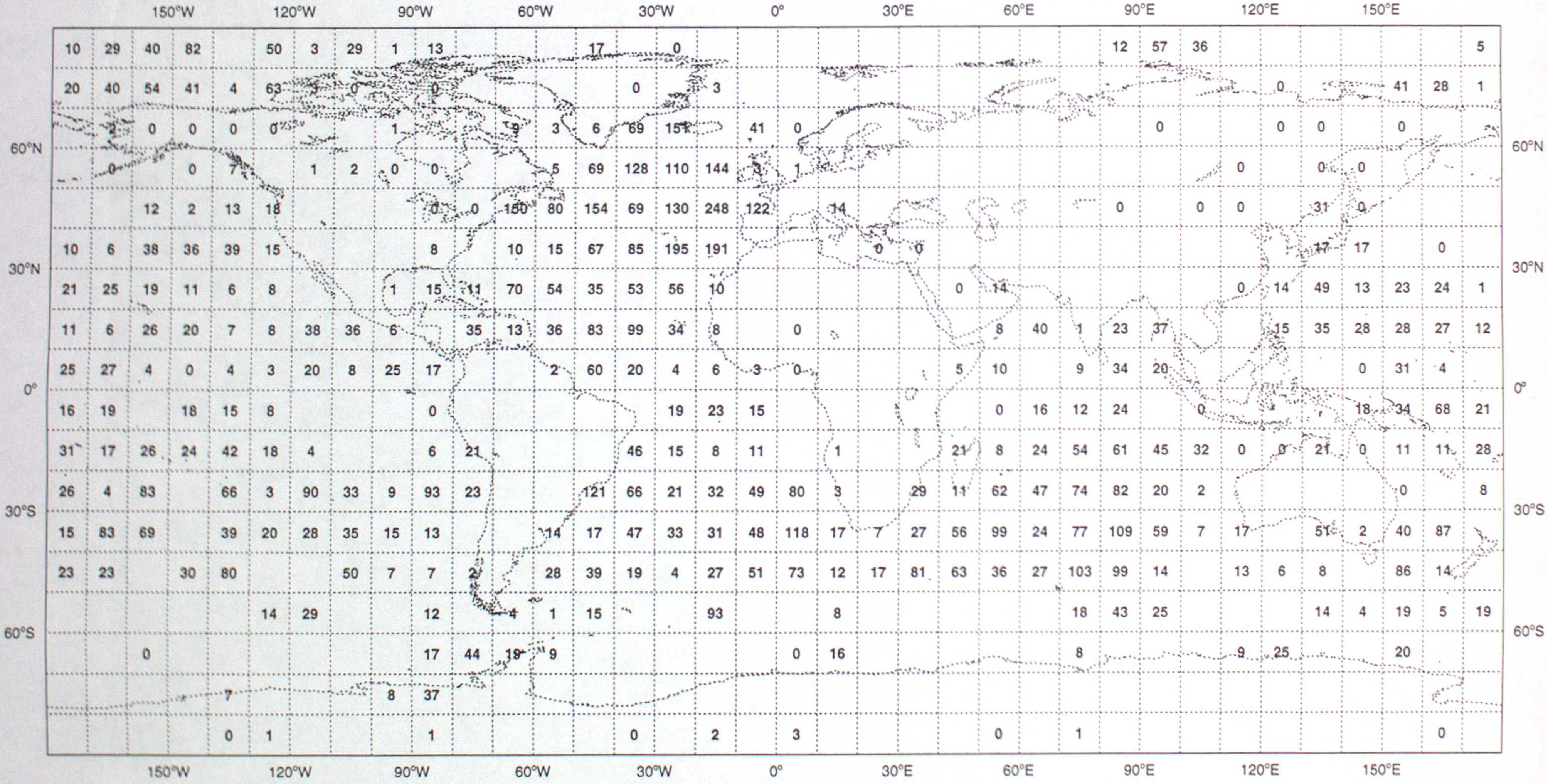

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10 29 40 82 50 3 29 1 13 17 0 12 57 36 5
20 40 54 41 4 63 3 0 0 0 3 0 41 28 1
2 0 0 0 0 1 9 3 6 69 151 41 0 0 0 0 0
0 0 7 1 2 0 0 5 69 128 110 144 3 1 0 0 0
12 2 13 18 0 0 150 80 154 69 130 248 122 14 0 0 0 31 0
10 6 38 36 39 15 8 10 15 67 85 195 191 0 0 17 17 0
21 25 19 11 6 8 1 15 11 70 54 35 53 56 10 0 14 0 14 49 13 23 24 1
11 6 26 20 7 8 38 36 6 35 13 36 83 99 34 8 0 8 40 1 23 37 15 35 28 28 27 12
25 27 4 0 4 3 20 8 25 17 2 60 20 4 6 3 0 5 10 9 34 20 0 31 4
16 19 18 15 8 0 19 23 15 0 16 12 24 0 18 34 68 21
31 17 26 24 42 18 4 6 21 46 15 8 11 1 21 8 24 54 61 45 32 0 0 21 0 11 11 28
26 4 83 66 3 90 33 9 93 23 121 66 21 32 49 80 3 29 11 62 47 74 82 20 2 0 8
15 83 69 39 20 28 35 15 13 14 17 47 33 31 48 118 17 7 27 56 99 24 77 109 59 7 17 51 2 40 87
23 23 30 80 50 7 7 2 28 39 19 4 27 51 73 12 17 81 63 36 27 103 99 14 13 6 8 86 14
14 29 12 4 1 15 93 8 18 43 25 14 4 19 5 19
0 17 44 19 9 0 16 8 9 25 20
7 8 37
0 1 1 0 2 3 0 1 0

TABLE 2B

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Element monitored		:Sea temperature (Degrees C).
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:10 degrees	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:
	1.|bias|	≥ 3 degrees
	2.SD	≥ 5 degrees
	3.PGE	≥ 25.

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
SEA TEMPERATURE											
15501	-10.1	-36.2	ALL	TS	SUR	105	105	100			
17635	-30.2	-14.8	ALL	TS	SUR	311	311	100			
17654	-20.4	103.4	ALL	TS	SUR	103	0	0	1.1	3.4	3.6
21599	29.1	126.6	ALL	TS	SUR	26	0	0	0.4	-3.9	3.9
33502	-23.7	-10.6	ALL	TS	SUR	108	0	0	0.3	4.4	4.4
33560	-40.8	68.5	ALL	TS	SUR	755	527	70	0.6	0.2	0.6
43508	11.1	-113.7	ALL	TS	SUR	248	248	100			
44507	40.7	-48.3	ALL	TS	SUR	350	0	0	1.0	-5.1	5.2
44532	63.1	-95.0	ALL	TS	SUR	46	46	100			
44624	44.3	-44.7	ALL	TS	SUR	420	0	0	1.1	-4.0	4.2
46969	43.3	-124.3	ALL	TS	SUR	233	154	66	2.5	6.4	6.9
51527	-3.7	155.5	ALL	TS	SUR	237	237	100			
51566	56.4	-107.7	ALL	TS	SUR	51	51	100			
52618	-2.7	141.3	ALL	TS	SUR	215	0	0	2.2	-3.3	4.0
53517	-14.6	92.3	ALL	TS	SUR	709	0	0	2.4	4.5	5.1
55912	-39.2	164.6	ALL	TS	SUR	725	1	0	1.4	4.1	4.3
61589	42.2	134.0	ALL	TS	SUR	381	197	52	5.8	-0.2	5.8
61638	61.1	-150.0	ALL	TS	SUR	20	20	100			
62843	45.5	-16.6	ALL	TS	SUR	437	329	75	6.5	-2.6	7.0
62844	42.9	-25.5	ALL	TS	SUR	451	362	80	2.9	-8.1	8.6

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
61492	16.1N	13.5W	18	MS	53	0	0	2	1.6	4.1	4.4
61816	10.9N	14.3W	69	MS	29	9	31	7	2.3	-1.4	2.7
62056	32.8N	21.8E	625	S8	94	0	0	2	1.2	-5.9	6.0
62790	12.1N	24.9E	674	MS	92	3	3	4	2.6	4.0	4.8
62805	11.8N	34.4E	474	MS	82	1	1	0	2.3	-4.5	5.1
63175	9.5N	45.6E	1032	M	21	0	0	43	1.2	7.1	7.2
63333	11.1N	39.7E	1903	MS	32	0	0	0	0.7	4.1	4.2
63334	10.3N	37.7E	2515	MS	37	1	3	32	1.2	8.6	8.7
63402	7.7N	36.8E	1725	MS	22	0	0	0	1.0	6.0	6.1
63471	9.6N	41.9E	1260	MS	37	0	0	24	0.6	8.4	8.4
63478	5.9N	43.6E	295	MS	29	0	0	31	1.0	6.2	6.3
63602	3.1N	30.9E	1204	S	49	48	98	0	0.0	-9.5	9.5
63680	0.3N	32.6E	1144	S	27	0	0	0	1.0	-8.3	8.4
68030	18.5S	25.6E	1071	8	88	0	0	0	0.8	4.4	4.5
68338	26.9S	24.6E	1234	S8	65	65	100	0			
68396	26.5S	31.3E	641	S8	51	0	0	0	0.7	4.8	4.9
68575	30.0S	30.0E	1175	S8	115	115	100	0			
68902	37.1S	12.3W	23	MS	292	1	0	0	1.9	-4.2	4.6

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30554	54.5N	113.6E	995	MS	124	0	0	0	5.3	4.2	6.8
30967	49.9N	115.8E	623	MS	91	0	0	0	1.6	-5.7	5.9
40740	36.8N	54.3E	1286	MS	28	0	0	39	1.5	-4.0	4.3
40741	36.6N	61.2E	235	MS	27	0	0	0	1.1	-4.7	4.8
41254	23.1N	57.7E	1755	S8	70	70	100	0			
41396	16.0N	48.9E	700	MS	48	0	0	0	0.6	6.5	6.5
41466	13.7N	44.1E	1402	8	53	1	2	0	0.6	-6.1	6.1
41696	29.0N	66.6E	2015	M	96	48	50	0	0.7	-0.7	1.0
47022	40.8N	128.2E	1200	S	104	1	1	2	1.7	4.6	4.9
51495	43.5N	91.6E	874	M	124	0	0	0	1.4	5.3	5.5
52602	38.8N	93.4E	2734	S	124	0	0	0	1.1	-5.9	6.0
52866	36.6N	101.8E	2262	S	124	0	0	0	1.0	-4.0	4.1
52955	35.6N	100.8E	3201	S	123	1	1	0	0.9	12.9	12.9
56144	31.8N	98.6E	3184	S	124	0	0	0	1.3	-4.8	5.0
56146	31.6N	100.0E	339	S	124	124	100	0			
56444	28.5N	98.9E	3488	S	124	57	46	31	0.6	13.4	13.4
56462	29.0N	101.5E	2994	S	124	0	0	0	1.2	8.7	8.8

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	47	0	0	2	1.2	-5.2	5.3
80342	1.4N	77.3W	1796	S	43	1	2	0	0.7	4.1	4.2
80410	10.1N	69.3W	613	MS	114	35	31	1	1.8	0.2	1.8
83214	10.3S	54.9W	285	MS	86	0	0	0	4.2	-6.5	7.7
83235	12.4S	46.4W	604	MS	90	0	0	0	0.9	6.1	6.2
83332	14.1S	46.4W	826	MS	89	4	4	0	0.9	13.1	13.1
83376	15.9S	49.0W	740	MS	90	0	0	0	0.7	-4.0	4.1
83408	14.3S	43.8W	447	MS	79	0	0	0	0.7	10.6	10.6
83488	17.8S	42.9W	1097	MS	88	88	100	0			
83531	18.6S	46.5W	940	MS	85	0	0	1	0.9	-6.8	6.9
83579	19.6S	46.9W	1004	MS	90	0	0	0	0.7	-4.1	4.2
83587	19.9S	43.9W	850	MS	89	0	0	0	0.8	-7.4	7.4
83773	23.1S	48.9W	793	MS	89	0	0	0	0.8	-10.9	10.9
83836	25.5S	50.6W	837	MS	91	0	0	0	0.8	-5.2	5.3
83953	30.9S	55.5W	231	MS	90	2	2	9	2.1	-10.9	11.1

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
84377	3.8S	73.3W	125	MS	66	0	0	0	1.0	4.3	4.4
84401	5.2S	80.6W	49	MS	73	0	0	0	0.9	4.9	5.0
84455	6.5S	76.4W	281	MS	54	0	0	6	2.1	6.3	6.6
84472	7.1S	78.5W	2620	S	28	0	0	0	0.8	-5.7	5.8
84501	8.1S	79.0W	26	MS	56	0	0	0	0.8	4.4	4.5
84686	13.6S	72.0W	3248	S	72	0	0	0	0.8	-4.1	4.2
84688	13.7S	73.4W	3444	S	26	0	0	0	0.5	-11.9	11.9
84720	14.9S	75.0W	567	MS	32	0	0	0	0.8	4.9	5.0
84782	18.1S	70.3W	468	MS	60	0	0	0	1.5	8.6	8.7
85140	14.3S	67.4W	140	MS	55	0	0	0	1.6	4.6	4.9
85264	18.5S	64.1W	1998	S	51	51	100	0			
85345	21.3S	63.4W	398	MS	50	0	0	0	1.4	4.0	4.2
85406	18.3S	70.3W	55	M	123	0	0	0	1.0	4.7	4.8
85432	22.5S	68.9W	2320	S8	85	0	0	1	2.2	5.6	6.0

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71115	50.2N	119.3W	555	M	91	1	1	99	1.0	7.8	7.9
71506	66.9N	136.3W	720	MS	123	0	0	0	1.2	-4.3	4.5
76118	30.4N	109.7W	1040	MS	33	0	0	0	0.8	-10.1	10.1
76243	28.7N	100.5W	250	MS	86	0	0	1	1.4	6.3	6.5
76743	18.0N	92.9W	10	MS	76	0	0	4	2.2	6.2	6.6
76773	17.8N	97.8W	1650	MS	21	0	0	0	1.5	4.1	4.4
76903	14.9N	92.3W	118	MS	92	0	0	0	0.7	6.8	6.8

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
92010	6.1S	145.4E	1587	M	48	0	0	0	0.6	10.1	10.1
92036	2.4S	147.4E	1	8	235	235	100	0			
94130	14.8S	131.9E	120	MS	123	0	0	0	0.8	5.3	5.4
94384	24.1S	151.9E	34	MS	116	0	0	0	0.5	4.1	4.1
94868	37.8S	145.0E	35	MS	124	0	0	34	4.4	6.7	8.0
96505	3.7N	115.7E	910	S8	28	28	100	0			
96881	7.6S	111.5E	110	S	26	0	0	0	4.4	4.0	5.9
97378	10.7S	123.1E	1	MS	46	45	98	0	0.0	-5.7	5.7

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
04416	72.6N	38.4W	3202	S	121	1	1	0	0.9	-5.0	5.1
06685	47.0N	9.1E	515	MS	124	0	0	6	1.2	5.3	5.4
10557	50.5N	11.1E	845	S8	371	371	100	0			
12140	54.4N	18.7E	2	MS	121	0	0	0	0.7	7.9	7.9
13269	44.3N	19.9E	176	MS	118	0	0	0	0.9	7.6	7.7
14554	44.9N	18.4E	140	S	50	2	4	0	0.7	-13.0	13.0
14650	43.8N	18.0E	972	S	62	62	100	0			
17092	39.8N	39.5E	1218	S8	123	0	0	0	1.2	7.7	7.8
17203	38.9N	40.5E	1177	S8	122	0	0	9	1.0	7.3	7.4

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	72	0	0	24	2.0	-6.5	6.8
89208	90.0S	0.0W	2835	M	47	32	68	0	0.3	-0.5	0.6
89264	71.4S	68.9W	780	S	275	0	0	0	1.4	6.6	6.7
89272	74.8S	71.5W	1369	S	272	272	100	0			
89512	70.8S	11.8E	140	MS	123	1	1	0	1.6	-5.1	5.3

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89612	66.3S	110.8E	390	S	259	259	100	0			
89627	77.2S	123.5E	3084	S	391	125	32	0	0.6	-14.0	14.0
89637	69.9S	130.0E	2560	S	318	207	65	0	2.5	13.8	14.0
89661	73.1S	169.6E	200	S	88	0	0	0	2.1	6.3	6.6
89666	76.7S	163.0E	200	S	73	72	99	0	0.0	13.3	13.3
89744	74.0S	43.0E	3353	S	278	0	0	0	0.8	6.9	6.9
89769	78.5S	168.4E	50	S	396	396	100	0			
89847	67.6S	146.0E	30	S	155	0	0	0	1.5	-9.1	9.2

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	51	0	47	1.5	0.7	51	8	51	0	6.0	0.7
AAH	1509	1	39	1.2	0.5	1501	0	39	0	5.7	0.7
AAL	7069	0	21	1.3	0.1	7005	0	21	0	6.6	0.8
AAR	1682	0	6	1.6	-0.6	1673	0	7	0	7.5	0.5
ACA	3801	0	8	1.5	0.1	3791	0	8	0	6.9	0.6
ACI	56	0	46	1.6	0.9	57	0	46	0	8.8	2.1
AEA	976	1	3	1.6	0.0	972	1	5	0	8.0	0.0
AEL	452	0	4	1.6	-0.3	447	0	4	0	7.4	0.4
AFL	696	1	3	1.9	0.6	689	0	2	0	6.2	0.9
AFR	1528	1	7	1.8	0.2	1537	0	7	0	7.9	0.6
AIH	309	1	4	1.6	0.0	311	0	3	0	6.4	0.5
AJM	192	0	1	1.2	-0.2	193	0	2	0	7.7	1.0
ALK	34	0	0	1.5	1.2	53	0	2	0	7.7	1.8
ALM	126	0	2	1.4	0.6	127	0	2	0	6.9	0.8
AMM	146	0	1	1.5	0.8	147	0	3	0	7.6	-0.1
AMT	850	1	43	1.8	0.4	850	0	43	0	6.6	0.8
AMX	245	2	5	1.8	0.1	246	0	5	0	10.4	1.5
ANA	1027	0	12	1.5	0.8	1023	0	13	0	7.1	0.4
ANZ	6067	0	33	1.4	0.3	6027	0	33	0	7.7	0.9
ARG	23	0	17	2.9	1.9	25	0	20	0	10.7	-1.7
AUA	22	0	0	1.5	0.9	22	0	0	0	4.4	0.2
AVA	438	1	6	1.8	0.8	436	0	7	0	9.0	-0.2
AVE	182	3	3	1.8	1.0	181	0	100	0	9.6	0.8
AVN	145	0	50	1.5	0.0	149	0	50	0	7.8	0.8
AXF	49	4	24	1.1	0.4	49	0	24	0	6.2	1.5
AZA	665	1	4	2.2	0.3	666	0	4	0	7.2	0.2
BAL	231	0	6	1.4	-0.2	233	0	7	0	7.2	0.4
BAW	1174	0	5	1.9	0.3	1185	0	6	0	7.6	0.5
BLX	47	2	2	1.6	0.5	43	2	2	0	5.9	2.1
BWA	309	1	6	2.0	1.4	311	0	6	0	9.5	0.8
CAL	135	0	4	1.7	0.8	134	0	5	0	6.7	1.0
CCA	254	1	12	2.4	0.7	277	0	100	0	13.2	0.9
CES	499	1	7	1.5	0.6	517	1	9	0	9.4	0.6
CFC	72	3	21	1.7	0.3	71	0	24	0	8.5	2.4
CFG	629	0	3	1.6	-0.5	627	1	4	0	7.6	0.6
CLX	523	0	4	1.5	0.0	523	0	6	0	7.3	0.0
CMI	284	1	2	1.7	0.3	278	0	3	0	9.1	1.6
CMM	680	0	6	1.4	-0.1	683	0	7	0	5.7	0.5
COA	1418	0	27	1.3	0.0	1402	0	28	0	7.9	1.4
CRL	542	0	6	1.8	0.8	545	0	8	0	8.4	0.7
CSN	122	0	1	1.4	0.3	122	1	47	0	8.9	0.9
CTB	73	1	11	1.8	0.8	72	0	8	0	6.3	0.9
CUB	184	0	3	1.8	1.2	186	1	4	0	8.2	0.3
DAL	4027	0	40	1.4	-0.1	4036	0	41	0	6.4	0.6
DLH	2181	1	6	1.5	0.2	2178	0	6	0	6.3	0.8
EDW	37	0	3	1.3	0.1	37	0	3	0	5.5	1.6
EIA	258	1	42	1.6	-0.3	255	0	42	0	9.5	1.2
EIN	27	0	7	1.2	-0.2	27	0	7	0	5.3	0.6
ELY	75	0	4	2.1	0.4	74	0	0	0	5.5	0.3
ETH	33	0	12	1.1	-0.1	33	0	12	0	5.9	1.3
EVA	533	1	6	1.5	-0.1	547	1	6	0	7.3	0.7
EWW	112	0	4	1.2	0.3	115	0	5	0	5.9	1.2
FDX	2096	0	39	1.5	0.4	2096	0	39	0	6.9	0.6
FIN	298	0	2	1.6	0.2	284	0	2	0	6.3	0.6
FJI	744	2	48	1.6	0.4	723	0	48	0	9.1	0.1
FOM	538	1	30	1.5	-0.1	534	0	29	0	5.4	0.8
FWQ	109	0	54	1.4	0.5	109	0	53	0	5.0	0.4
GAF	57	0	2	1.2	-0.6	57	0	4	0	6.5	1.6
GCO	205	0	10	1.3	0.4	208	0	100	0	14.5	4.3

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GHA	72	1	3	0.9	-0.2	72	0	4	0	10.4	1.6
GIA	23	0	13	1.3	0.7	23	9	17	0	7.3	2.2
GRL	59	0	2	1.8	-0.1	59	0	0	0	4.5	0.8
GTI	195	1	3	1.6	-0.3	199	0	4	0	7.0	0.9
HAL	4023	0	35	1.4	0.3	3958	0	35	0	7.8	1.4
HLN	24	0	4	1.7	-0.4	25	0	0	0	5.5	0.3
HVN	98	3	3	1.2	0.6	95	0	0	0	4.9	1.2
IBE	3250	1	6	1.7	0.5	3206	0	8	0	8.9	0.4
ICE	1210	0	2	1.4	0.1	1178	0	3	0	6.3	1.1
IWD	178	2	3	1.3	-0.4	178	0	3	0	8.2	1.0
JAA	94	4	5	1.9	1.1	94	0	0	0	6.0	2.6
JAL	5900	0	4	1.6	0.3	5888	0	5	0	7.7	0.5
JAZ	1253	0	3	1.7	1.1	1239	0	4	0	7.2	0.2
JKK	358	0	11	1.5	-0.1	341	0	14	0	9.4	0.9
JMC	195	1	5	1.6	0.4	188	0	6	0	8.2	0.2
KAL	3561	0	7	1.7	0.1	3563	0	7	0	8.1	0.4
KLM	2638	0	8	1.6	0.2	2663	0	8	0	6.8	0.8
LAN	88	10	20	3.0	1.3	91	1	10	0	11.3	1.0
LAP	58	3	40	1.5	0.4	58	2	40	0	7.9	0.0
LDA	105	1	8	1.8	0.1	103	1	7	0	6.5	0.4
LDI	525	0	2	1.5	-0.4	532	0	4	0	7.3	0.3
LIB	955	1	9	1.8	0.9	959	0	9	0	7.6	0.4
LOT	310	0	2	1.8	-1.1	308	0	4	0	7.3	0.8
LTU	756	0	3	1.5	-0.2	769	0	3	0	7.8	0.6
MAS	477	1	6	1.7	0.5	486	0	6	0	7.3	0.3
MAU	21	0	10	2.9	0.1	22	0	0	0	7.5	0.8
MON	105	4	6	1.7	0.0	103	0	2	0	6.2	0.0
MPD	315	1	6	1.7	-0.1	315	0	6	0	9.2	0.4
MPH	537	1	3	1.7	-0.8	534	0	3	0	6.9	0.4
NCA	753	0	3	1.5	0.2	738	0	3	0	7.6	0.8
NWA	11380	1	7	1.6	0.5	11328	0	8	0	7.5	0.4
NZL	2736	0	9	1.3	-0.1	2736	0	9	0	5.0	0.6
OAE	310	0	40	1.4	0.1	309	0	41	0	7.4	1.0
PAC	276	0	29	1.5	0.2	279	0	30	0	8.0	0.7
PAL	1576	0	10	1.3	0.2	1510	0	11	0	8.0	0.4
PAO	374	1	53	1.2	0.2	367	1	53	0	7.9	1.0
PIC	85	4	4	1.7	1.3	82	0	0	0	5.7	0.7
PUA	27	0	33	1.5	0.0	27	0	41	0	17.9	4.9
QFA	4602	0	56	1.5	0.5	4576	0	56	0	6.9	0.6
RAF	39	0	3	1.5	1.0	45	0	2	0	9.7	1.5
RAM	65	0	6	1.8	-0.7	65	0	6	0	8.1	2.0
RCH	295	1	19	3.0	0.1	263	0	100	0	10.6	1.3
RKA	87	0	5	1.6	-0.5	85	1	9	0	9.6	0.5
RRR	136	2	10	1.6	-0.1	137	0	9	0	7.3	1.5
RSL	21	5	29	3.0	0.6	21	0	29	0	16.8	2.6
RYN	372	1	41	1.6	0.7	371	0	41	0	5.0	0.6
RZO	327	0	4	1.9	-0.4	322	0	6	0	9.7	0.9
SAA	565	1	3	1.5	0.1	561	0	2	0	7.0	0.4
SAS	62	0	3	1.3	0.0	60	0	5	0	8.1	1.2
SIA	495	0	2	1.5	0.3	506	0	2	0	6.2	0.6
SLR	144	1	6	1.4	0.5	140	0	4	0	6.4	1.3
SOL	31	0	0	1.1	0.8	31	0	6	0	10.0	-1.1
SSV	22	0	14	1.5	-0.4	21	0	14	0	7.3	2.9
SVA	33	0	3	1.1	-0.1	42	0	12	0	4.8	0.2
SWR	45	9	16	1.3	0.2	47	0	21	0	13.6	4.4
TAG	40	0	35	1.8	-0.4	40	0	35	0	4.9	0.5
TAM	95	5	19	2.1	0.9	96	0	18	0	12.3	3.2
TAP	866	1	5	1.6	-0.1	859	0	6	0	7.8	0.5
TBA	31	0	23	2.9	1.5	32	0	28	0	14.8	3.9

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
THA	279	0	5	1.6	-0.1	278	0	59	0	9.4	0.7
THT	285	2	32	3.9	3.4	276	0	31	0	7.3	1.1
TPA	28	0	7	2.5	0.0	29	0	3	0	9.5	1.4
TSC	227	1	5	1.5	-0.1	233	0	42	0	7.3	1.2
TWA	1423	0	31	1.3	0.3	1409	0	31	0	5.7	0.8
UAL	146470	0	100	1.0	-0.1	146273	0	100	0	5.2	0.6
UPS	1672	1	43	1.5	0.3	1683	0	43	0	6.4	0.7
USA	247	0	6	1.7	-0.1	209	0	6	0	6.9	1.1
VIR	626	1	4	1.6	0.2	643	0	4	0	6.4	0.9
VRG	363	2	25	2.2	0.7	373	0	100	0	13.2	2.4
WOA	272	1	7	1.5	0.5	300	0	9	0	8.0	0.7
YSS	60	0	5	2.2	0.6	60	2	7	0	11.0	0.7
AR	2875	1	100	4.8	4.3	2869	0	4	0	6.0	1.4
AU	60654	0	14	1.3	0.5	60654	0	14	0	5.3	0.6
EU	113293	0	24	1.3	0.4	113292	0	23	0	4.7	0.6
KL	5793	9	36	1.5	1.1	5760	0	35	0	12.4	2.0
LH	2594	0	9	1.6	1.0	2582	0	9	0	5.5	1.3
LN	25	0	44	1.5	1.1	26	0	42	0	7.1	1.9
MK	2956	0	12	3.9	3.5	2941	0	6	0	7.1	1.2
SA	3194	0	23	1.7	0.9	3194	0	9	0	5.8	0.9
SV	1893	0	62	2.6	2.3	1877	0	2	0	5.4	0.5
WA	331	5	17	2.2	0.3	320	8	100	0	9.5	0.2
XX	4573	2	8	1.5	0.5	4546	0	9	0	9.6	1.2
N	737	2	17	2.4	0.8	751	0	15	0	7.0	0.9
US ACARS	856947	1	55	1.3	0.4	856941	0	54	0	5.5	0.9

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	280	1	12	1.3	-0.1	273	0	12	0	7.8	1.1
ACA	24	17	25	1.1	-0.3	24	0	21	0	16.2	2.9
ACI	26	0	54	1.1	0.0	26	0	58	0	12.5	-0.5
AFR	37	3	5	1.7	0.1	37	0	3	0	6.5	0.3
ANZ	156	4	22	1.6	0.1	159	0	19	0	6.9	0.9
AXF	29	0	31	1.1	0.6	29	0	38	0	11.7	0.7
BAF	51	6	10	1.0	0.4	50	0	8	0	9.5	1.0
CES	24	0	38	1.3	0.3	25	0	40	0	10.4	3.0
CFC	130	2	9	1.5	0.5	131	1	7	0	5.4	0.6
CFG	25	0	4	1.3	0.1	25	0	4	0	5.6	-0.3
CMI	70	4	13	3.2	-1.6	61	2	5	0	10.6	5.0
COA	274	1	31	1.4	0.3	275	0	33	0	9.0	1.2
CUB	51	0	12	3.3	2.2	53	0	8	0	12.3	0.9
DAF	20	0	0	2.1	1.0	21	0	0	0	5.4	1.3
DAL	133	1	44	1.2	-0.1	130	0	45	0	7.7	-0.3
DHL	51	2	57	6.5	-6.3	49	0	14	0	11.0	2.4
DLH	196	0	19	1.2	0.5	187	0	22	0	7.2	1.5
EVA	47	0	30	1.1	-0.6	48	0	31	0	8.3	1.9
EWW	62	0	2	1.0	0.4	62	0	2	0	6.0	0.7
FDX	532	2	29	1.8	0.5	540	0	26	0	6.7	0.5
FOM	21	10	38	1.9	0.4	21	0	29	0	11.2	2.9
FXI	22	5	9	3.0	1.3	24	0	8	0	15.0	0.4
GAF	65	3	5	1.4	0.2	63	0	2	0	8.3	0.3
GCO	333	1	6	1.5	0.0	337	0	100	0	16.7	4.6
GHA	34	12	21	1.5	-0.7	34	0	12	0	11.6	0.2
HAL	131	1	40	1.8	0.1	130	1	40	0	7.1	1.0
IBE	87	6	21	1.3	0.5	85	0	20	0	6.4	-0.2
ICE	40	0	0	1.0	-0.3	38	0	0	0	4.7	1.1
JAL	80	0	5	1.2	0.3	80	0	5	0	6.5	2.0
JAZ	169	2	3	1.6	1.2	167	0	1	0	6.3	-0.8
KAL	94	0	28	1.7	-0.5	93	0	28	0	6.5	0.5
KIW	63	5	37	2.6	1.7	69	0	35	0	7.0	0.5
KLM	76	1	5	1.7	0.5	77	0	4	0	8.6	0.2
LAN	180	6	10	3.0	0.4	182	1	2	0	10.2	4.2
LIB	53	2	4	1.3	0.9	55	2	7	0	9.9	1.0
MAS	46	2	28	1.9	-0.1	45	0	24	0	5.6	0.1
MPH	25	0	8	1.1	0.0	25	0	8	0	4.6	-0.2
NAT	25	4	8	1.7	0.8	25	0	8	0	10.1	1.3
NCA	61	0	0	1.4	0.0	56	0	5	0	8.0	0.3
NWA	264	1	19	1.6	0.6	261	0	18	0	6.4	-0.3
NZL	8336	0	56	1.2	0.1	8336	0	56	0	4.8	0.4
PAC	39	0	5	1.3	0.2	39	0	5	0	7.3	0.8
PAL	38	0	5	0.8	-0.2	34	0	6	0	5.0	1.0
PAO	23	0	48	2.3	-0.7	23	0	48	0	6.2	-1.5
QFA	201	4	52	1.4	0.4	203	0	50	0	8.5	1.2
RCH	160	1	11	2.9	-0.2	153	1	99	0	14.6	4.5
RRR	215	5	20	4.1	3.3	214	0	10	0	8.9	0.5
RZO	41	0	0	0.7	0.2	41	0	2	0	9.7	1.6
SAA	38	0	3	1.7	-0.2	39	0	0	0	5.1	-1.9
SIA	74	0	0	1.4	0.4	73	0	0	0	5.4	1.4
SWR	32	0	9	1.6	1.0	31	0	26	0	15.4	-1.5
TAM	21	5	19	1.2	0.3	21	0	19	0	11.5	3.8
THA	25	0	0	1.3	0.3	26	0	62	0	12.0	-0.1
UAL	237588	0	100	1.2	0.0	237143	0	100	0	4.3	0.4
UPS	237	1	33	1.5	0.2	236	0	33	0	7.8	0.3
VHJ	80	0	3	2.3	0.4	80	0	1	0	9.1	0.0
VTA	29	0	0	1.8	-1.1	32	0	0	0	4.7	0.8
VVP	64	11	56	4.6	2.1	67	1	49	0	14.3	2.4

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AR	2316	0	100	3.1	2.6	2295	0	53	0	3.9	1.0
AU	99777	0	65	1.1	0.2	99779	0	65	0	3.9	0.5
EU	566566	0	72	1.0	0.3	566126	0	72	0	3.6	0.0
KL	4420	9	71	1.7	1.1	4408	0	71	0	6.3	1.0
LH	1092	0	62	1.6	0.3	1085	0	62	0	4.2	0.9
MK	2654	0	54	2.7	2.2	2655	0	52	0	4.1	0.5
SA	2069	0	59	1.6	0.6	2069	0	54	0	4.4	0.8
SV	3238	0	85	3.1	2.5	3205	0	50	0	4.7	1.2
WA	54	28	39	1.8	0.4	53	4	100	0	15.6	-1.0
XX	907	4	10	1.7	0.3	897	0	13	0	11.9	1.8
US ACARS	1208377	0	71	1.3	0.4	1205196	0	72	0	4.4	0.4

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 42171

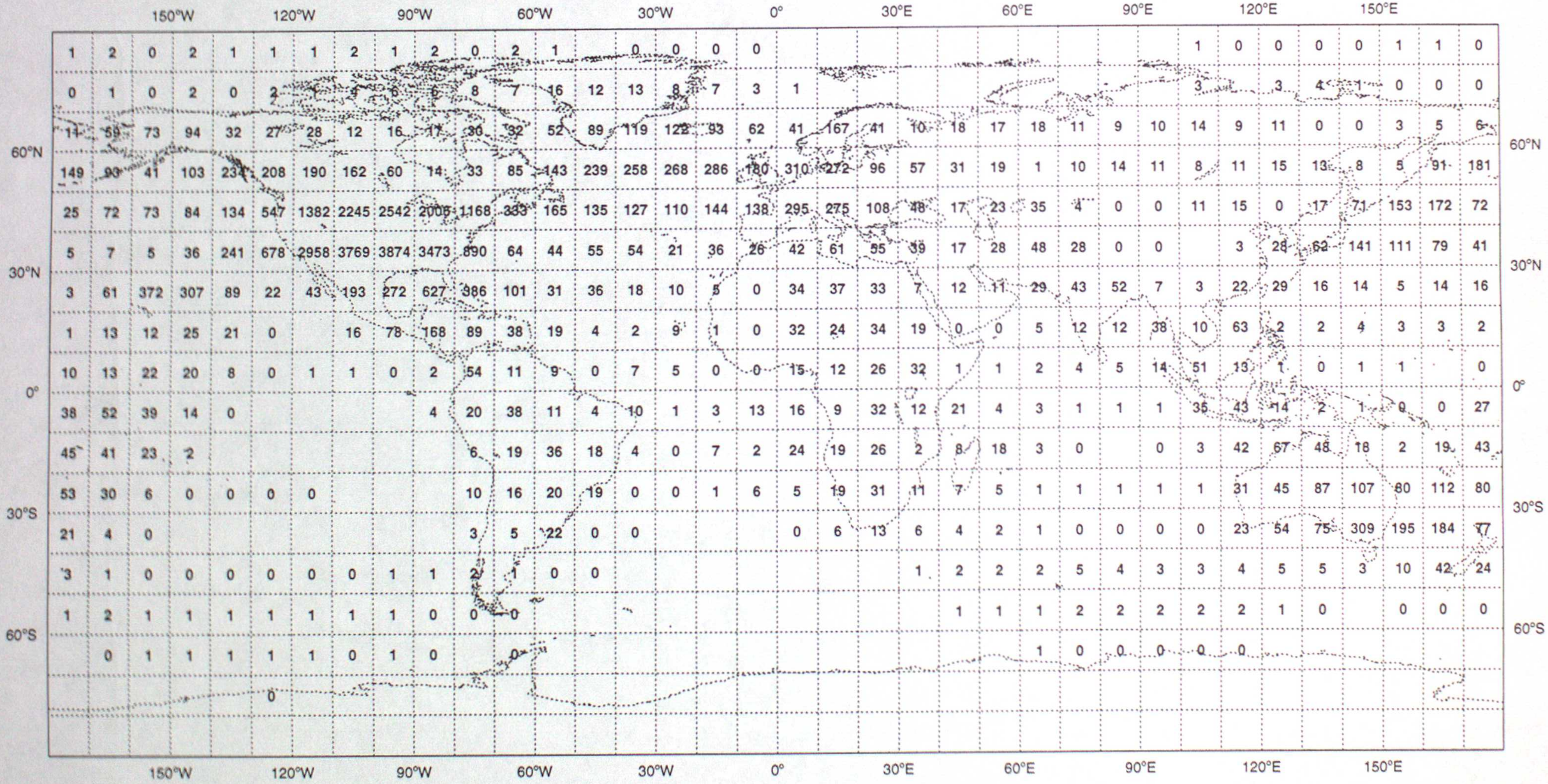

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
1 2 0 2 1 1 1 2 1 2 0 2 1 0 0 0 0 1 0 0 0 0 1 1 0
0 1 0 2 0 2 1 4 6 6 8 7 16 12 13 8 7 3 1 3 3 4 1 0 0 0
11 59 73 94 32 27 28 12 16 17 30 32 52 89 119 122 93 62 41 167 41 10 18 17 18 11 9 10 14 9 11 0 0 3 5 6
149 93 41 103 234 208 190 162 60 14 33 85 143 239 258 268 286 180 310 272 96 57 31 19 1 10 14 11 8 11 15 13 8 5 91 181
25 72 73 84 134 547 1382 2245 2542 2006 1168 333 165 135 127 110 144 138 295 275 108 48 17 23 35 4 0 0 11 15 0 17 71 153 172 72
5 7 5 36 241 678 2958 3769 3874 3473 890 64 44 55 54 21 36 26 42 61 55 39 17 28 48 28 0 0 3 28 62 141 111 79 41
3 61 372 307 89 22 43 193 272 627 386 101 31 36 18 10 5 0 34 37 33 7 12 11 29 43 52 7 3 22 29 16 14 5 14 16
1 13 12 25 21 0 16 78 168 89 38 19 4 2 9 1 0 32 24 34 19 0 0 5 12 12 38 10 63 2 2 4 3 3 2
10 13 22 20 8 0 1 1 0 2 54 11 9 0 7 5 0 0 15 12 26 32 1 1 2 4 5 14 51 13 1 0 1 1 0
38 52 39 14 0 4 20 38 11 4 10 1 3 13 16 9 32 12 21 4 3 1 1 1 35 43 14 2 1 0 0 27
45 41 23 2 6 19 36 18 4 0 7 2 24 19 26 2 8 18 3 0 0 3 42 67 48 18 2 19 43
53 30 6 0 0 0 0 10 16 20 19 0 0 1 6 5 19 31 11 7 5 1 1 1 1 1 31 45 87 107 80 112 80
21 4 0 3 5 22 0 0 0 6 13 6 4 2 1 0 0 0 0 23 54 75 309 195 184 77
3 1 0 0 0 0 0 0 1 1 2 1 0 0 1 2 2 2 5 4 3 3 4 5 5 3 10 42 24
1 2 1 1 1 1 1 1 1 0 0 0 1 1 1 2 2 2 2 2 1 0 0 0 0
0 1 1 1 1 1 0 1 0 0 1 0 0 0 0 0
0

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 69001

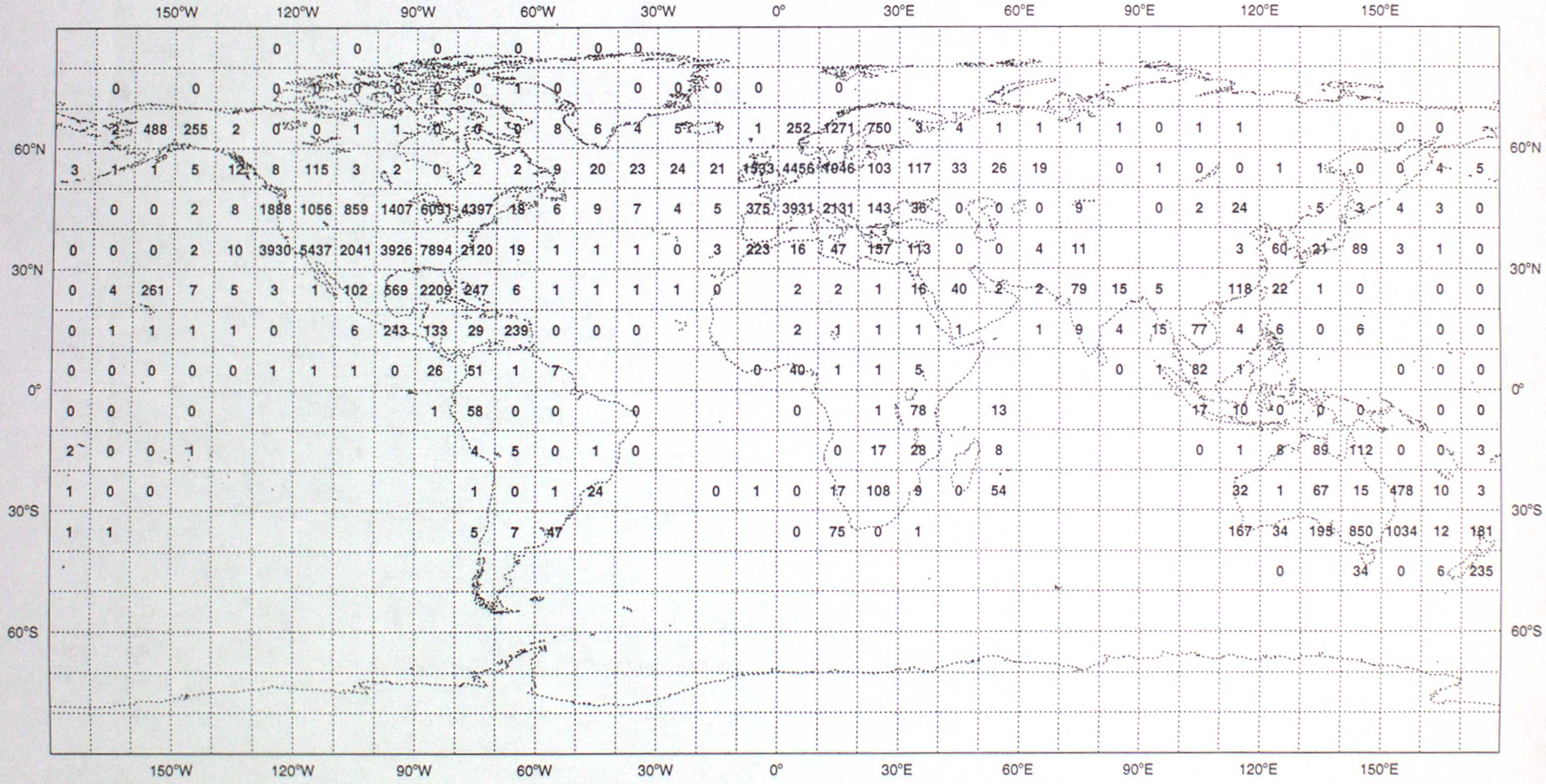

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 0 0 0 0 0
0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
2 488 255 2 0 0 1 1 0 0 0 8 6 4 5 1 1 252 1271 750 3 4 1 1 1 1 0 1 1 0 0
3 1 1 5 12 8 115 3 2 0 2 2 9 20 23 24 21 1533 4456 1046 103 117 33 26 19 0 1 0 0 1 1 0 0 4 5
0 0 2 8 1888 1056 859 1407 6091 4397 18 6 9 7 4 5 375 3931 2131 143 36 0 0 0 9 0 2 24 5 3 4 3 0
0 0 0 2 10 3930 5437 2041 3926 7894 2120 19 1 1 1 0 3 223 16 47 157 113 0 0 4 11 3 60 21 89 3 1 0
0 4 261 7 5 3 1 102 569 2209 247 6 1 1 1 1 0 2 2 1 16 40 2 2 79 15 5 118 22 1 0 0 0
0 1 1 1 1 0 6 243 133 29 239 0 0 0 2 1 1 1 1 1 9 4 15 77 4 6 0 6 0 0
0 0 0 0 0 1 1 1 0 26 51 1 7 0 40 1 1 5 0 1 82 1 0 0 0
0 0 0 1 58 0 0 0 0 1 78 13 17 10 0 0 0 0 0
2 0 0 1 4 5 0 1 0 0 17 28 8 0 1 8 89 112 0 0 3
1 0 0 1 0 1 24 0 1 0 17 108 9 0 54 32 1 67 15 478 10 3
1 1 5 7 47 0 75 0 1 167 34 195 850 1034 12 181
0 34 0 6 235

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

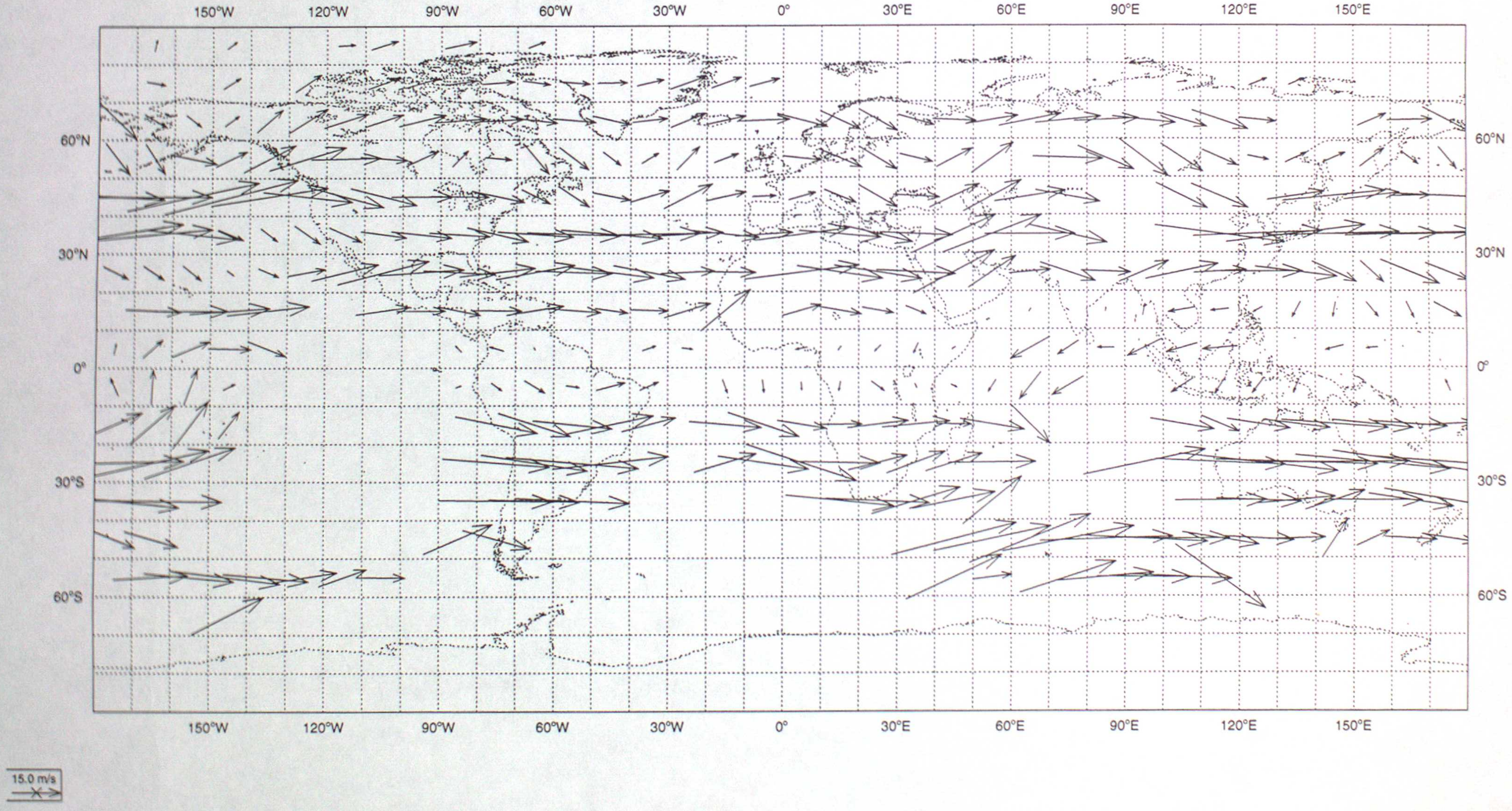

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

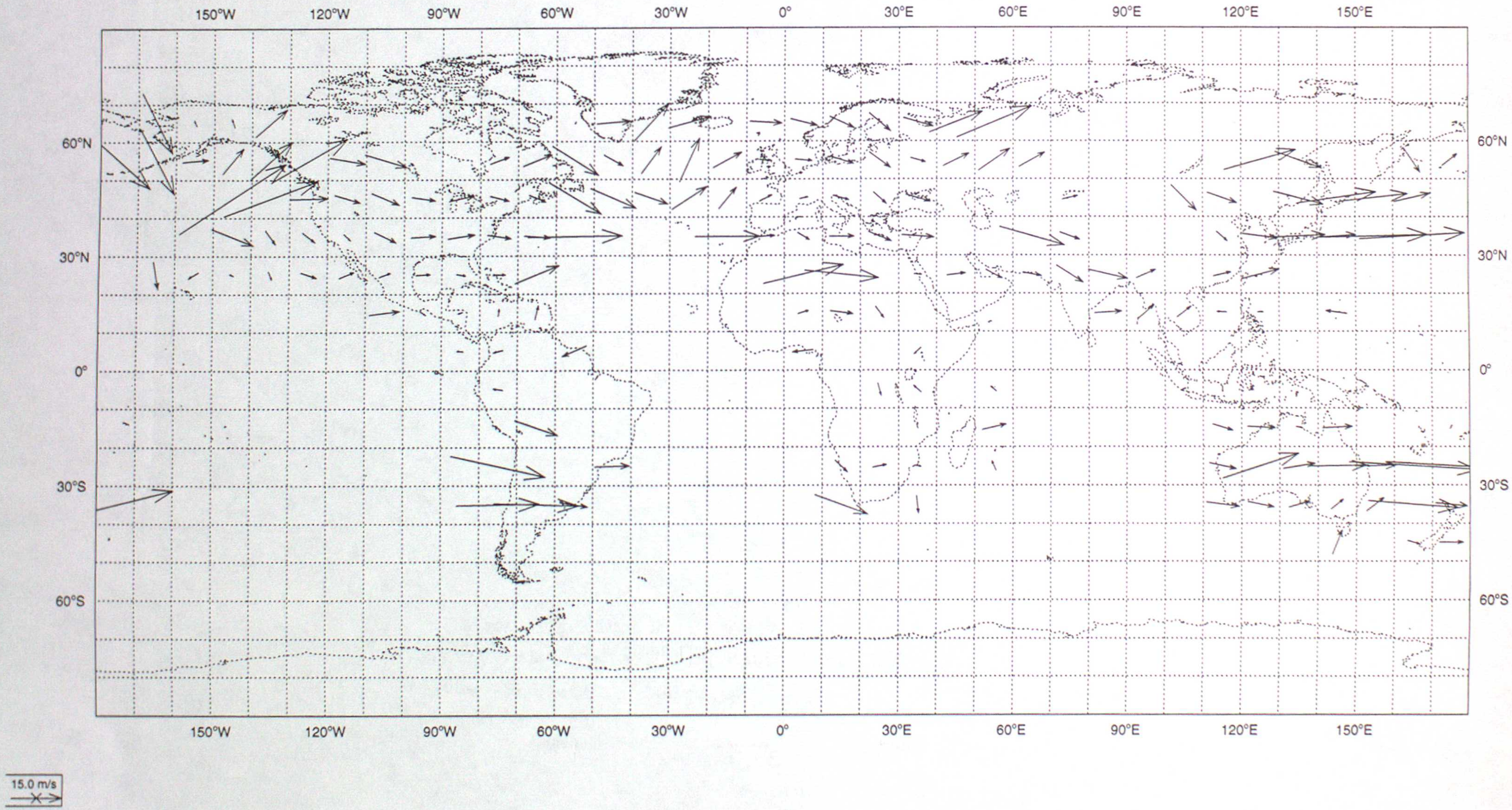

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

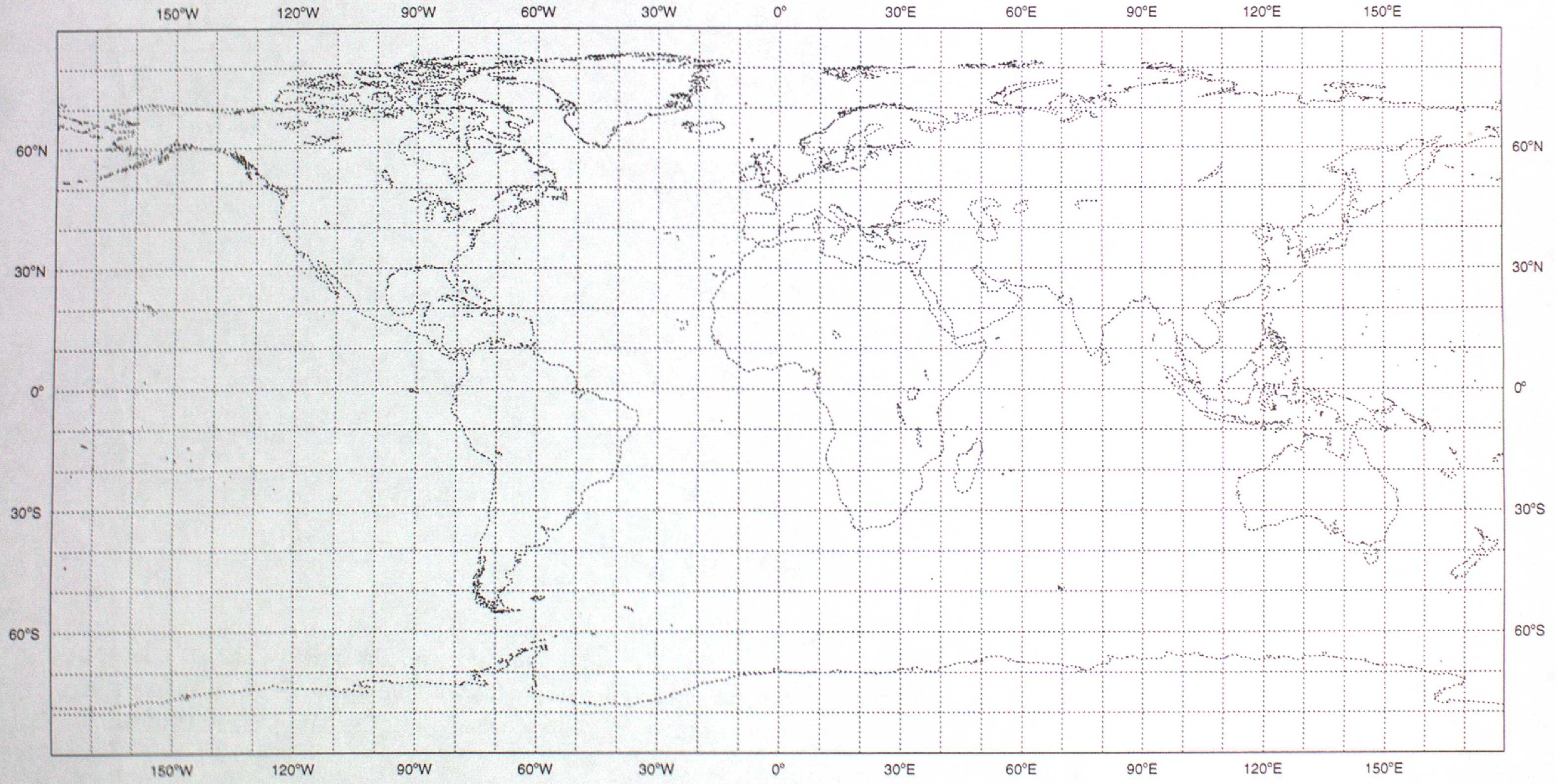

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

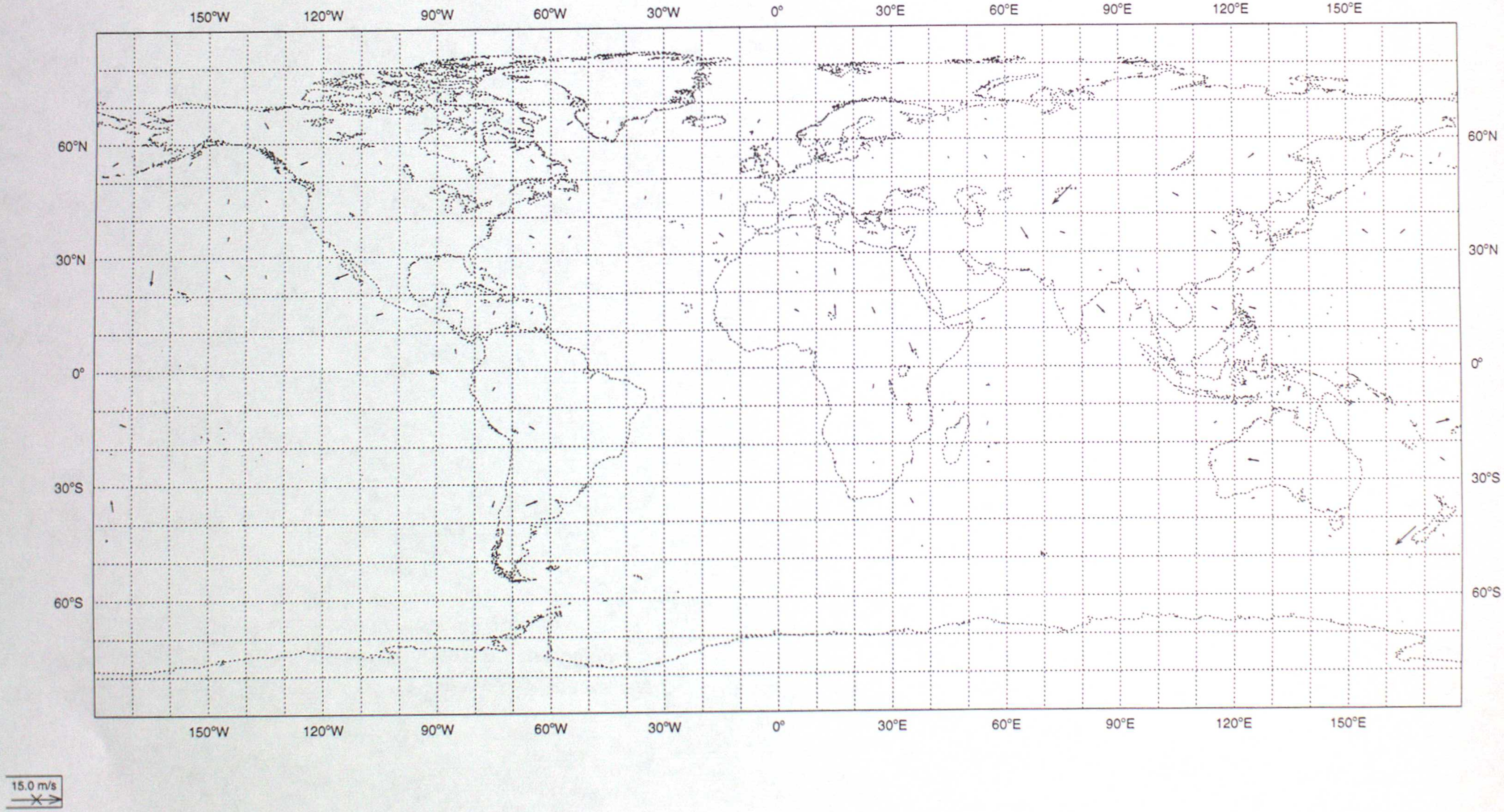

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

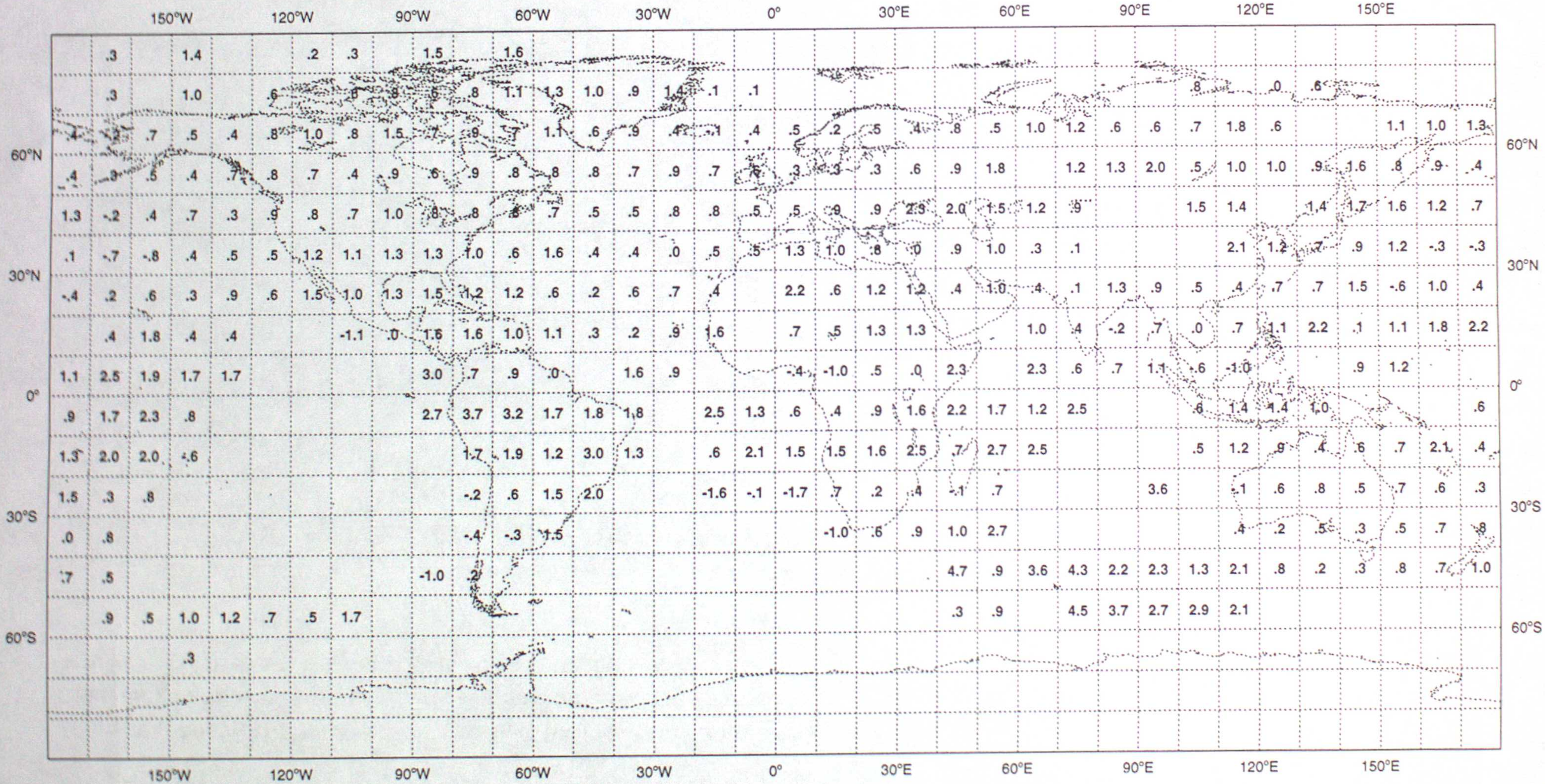

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.3 1.4 .2 .3 1.5 1.6
.3 1.0 .6 .8 1.1 1.3 1.0 .9 1.4 .1 .1 .8 .0 .6
.4 .2 .7 .5 .4 .8 1.0 .8 1.5 .7 .9 .7 1.1 .6 .9 .4 .1 .4 .5 .2 .5 .4 .8 .5 1.0 1.2 .6 .6 .7 1.8 .6 1.1 1.0 1.3
.4 .9 .5 .4 .7 .8 .7 .4 .9 .6 .9 .8 .8 .8 .7 .9 .7 .6 .3 .3 .3 .6 .9 1.8 1.2 1.3 2.0 .5 1.0 1.0 .9 1.6 .8 .9 .4
1.3 -.2 .4 .7 .3 .9 .8 .7 1.0 .8 .8 .8 .7 .5 .5 .8 .8 .5 .5 .9 .9 2.3 2.0 1.5 1.2 .9 1.5 1.4 1.4 1.7 1.6 1.2 .7
.1 -.7 -.8 .4 .5 .5 1.2 1.1 1.3 1.3 1.0 .6 1.6 .4 .4 .0 .5 .5 1.3 1.0 .8 .0 .9 1.0 .3 .1 2.1 1.2 .7 .9 1.2 -.3 -.3
-.4 .2 .6 .3 .9 .6 1.5 1.0 1.3 1.5 1.2 1.2 .6 .2 .6 .7 .4 2.2 .6 1.2 1.2 .4 1.0 .4 .1 1.3 .9 .5 .4 .7 .7 1.5 -.6 1.0 .4
.4 1.8 .4 .4 -1.1 .0 1.6 1.6 1.0 1.1 .3 .2 .9 1.6 .7 .5 1.3 1.3 1.0 .4 -.2 .7 .0 .7 1.1 2.2 .1 1.1 1.8 2.2
1.1 2.5 1.9 1.7 1.7 3.0 .7 .9 .0 1.6 .9 -.4 -1.0 .5 .0 2.3 2.3 .6 .7 1.1 .6 -1.0 .9 1.2
.9 1.7 2.3 .8 2.7 3.7 3.2 1.7 1.8 1.8 2.5 1.3 .6 .4 .9 1.6 2.2 1.7 1.2 2.5 .6 1.4 1.4 1.0 .6
1.3 2.0 2.0 .6 1.7 1.9 1.2 3.0 1.3 .6 2.1 1.5 1.5 1.6 2.5 .7 2.7 2.5 .5 1.2 .9 .4 .6 .7 2.1 .4
1.5 .3 .8 -.2 .6 1.5 2.0 -1.6 -.1 -1.7 .7 .2 .4 -.1 .7 3.6 .1 .6 .8 .5 .7 .6 .3
.0 .8 -.4 -.3 1.5 -1.0 .6 .9 1.0 2.7 .4 .2 .5 .3 .5 .7 .8
.7 .5 -1.0 .2 4.7 .9 3.6 4.3 2.2 2.3 1.3 2.1 .8 .2 .3 .8 .7 1.0
.9 .5 1.0 1.2 .7 .5 1.7 .3 .9 4.5 3.7 2.7 2.9 2.1
.3

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

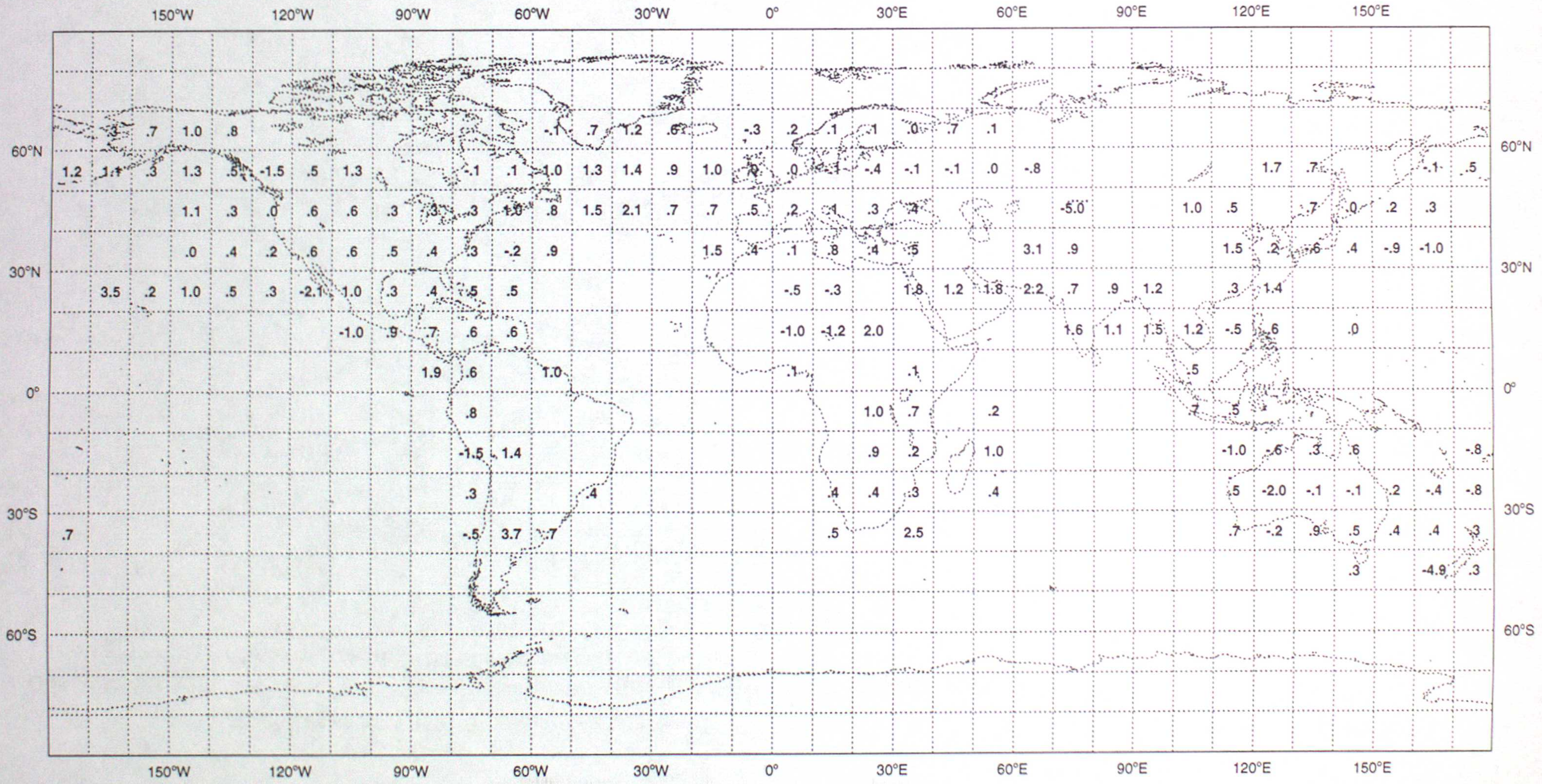

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-.3 .7 1.0 .8 -.1 .7 1.2 .6 -.3 .2 .1 .1 .0 .7 .1
1.2 1.1 .3 1.3 .5 -1.5 .5 1.3 -.1 .1 1.0 1.3 1.4 .9 1.0 .0 .0 -.1 -.4 -.1 -.1 .0 -.8 1.7 .7 -.1 .5
1.1 .3 .0 .6 .6 .3 .3 .3 1.0 .8 1.5 2.1 .7 .7 .5 .2 .1 .3 .4 -5.0 1.0 .5 .7 .0 .2 .3
.0 .4 .2 .6 .6 .5 .4 .3 -.2 .9 1.5 .4 .1 .8 .4 .5 3.1 .9 1.5 .2 .6 .4 -.9 -1.0
3.5 .2 1.0 .5 .3 -2.1 1.0 .3 .4 .5 .5 -.5 -.3 1.8 1.2 1.8 2.2 .7 .9 1.2 .3 1.4
-1.0 .9 .7 .6 .6 -1.0 -1.2 2.0 1.6 1.1 1.5 1.2 -.5 .6 .0
1.9 .6 1.0 .1 .1 .5
.8 1.0 .7 .2 .7 .5
-1.5 1.4 .9 .2 1.0 -1.0 .6 .3 .6 -.8
.3 .4 .4 .4 .3 .4 .5 -2.0 -.1 -.1 .2 -.4 -.8
.7 -.5 3.7 .7 .5 2.5 .7 -.2 .9 .5 .4 .4 .3
.3 -4.9 .3
150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

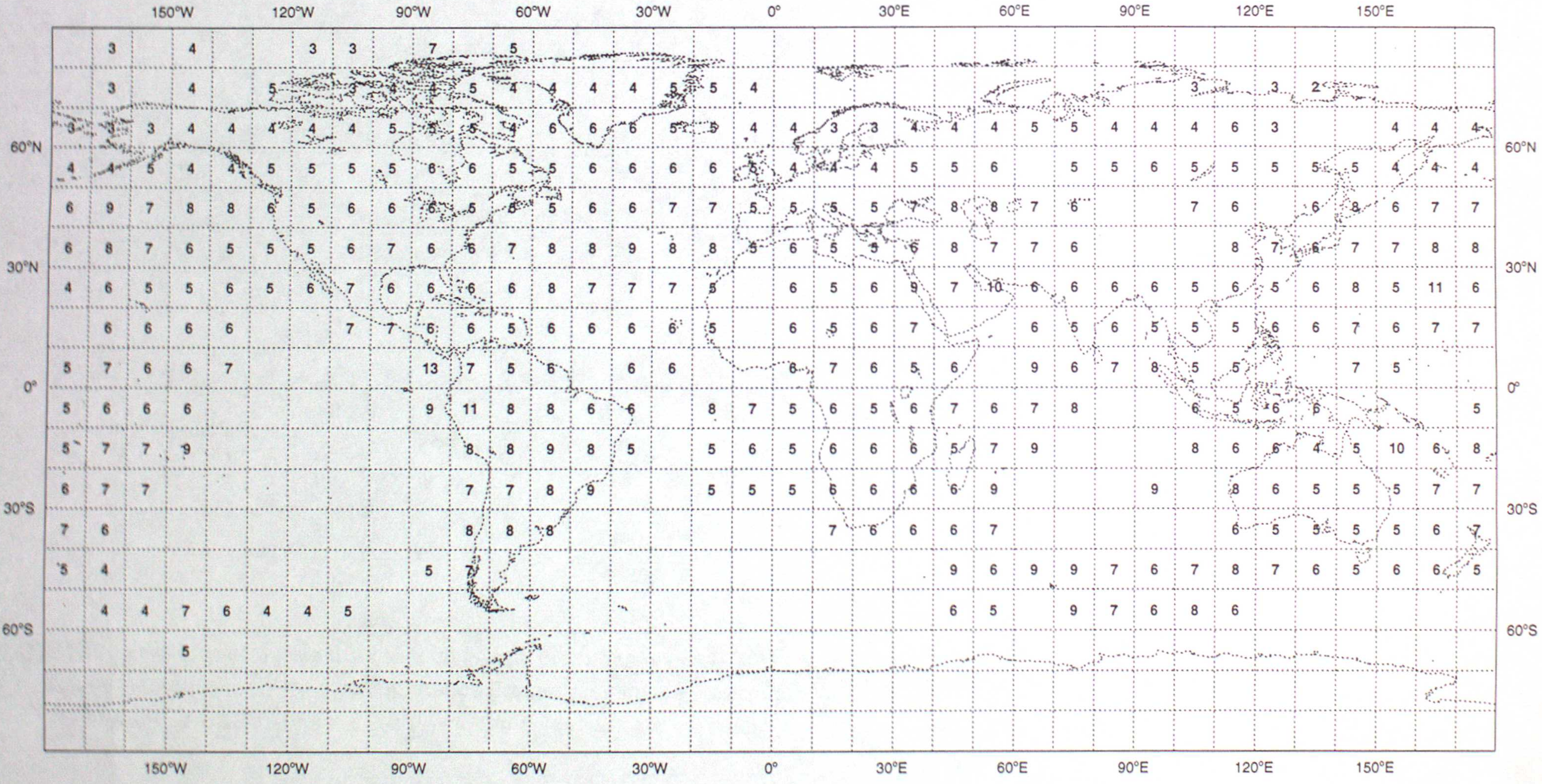

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
3 4 3 3 7 5
3 4 5 4 5 4 4 4 4 5 5 4 3 3 2
3 3 3 4 4 4 4 4 5 5 5 4 6 6 6 5 5 4 4 3 3 4 4 4 5 5 4 4 4 6 3 4 4 4
4 4 5 4 4 5 5 5 5 6 6 5 5 6 6 6 6 5 4 4 4 5 5 6 5 5 6 5 5 5 5 5 4 4 4
6 9 7 8 8 6 5 6 6 6 5 6 5 6 6 7 7 5 5 5 5 7 8 8 7 6 7 6 6 8 6 7 7
6 8 7 6 5 5 5 6 7 6 6 7 8 8 9 8 8 5 6 5 5 6 8 7 7 6 8 7 6 7 7 8 8
4 6 5 5 6 5 6 7 6 6 6 6 8 7 7 7 5 6 5 6 9 7 10 6 6 6 6 5 6 5 6 8 5 11 6
6 6 6 6 7 7 6 6 5 6 6 6 6 5 6 5 6 7 6 5 6 5 5 5 6 6 7 6 7 7
5 7 6 6 7 13 7 5 6 6 6 6 7 6 5 6 9 6 7 8 5 5 7 5
5 6 6 6 9 11 8 8 6 6 8 7 5 6 5 6 7 6 7 8 6 5 6 6 5
5 7 7 9 8 8 9 8 5 5 6 5 6 6 6 5 7 9 8 6 6 4 5 10 6 8
6 7 7 7 7 8 9 5 5 5 6 6 6 6 9 9 8 6 5 5 5 7 7
7 6 8 8 8 7 6 6 6 7 6 5 5 5 5 6 7
5 4 5 7 9 6 9 9 7 6 7 8 7 6 5 6 6 5
4 4 7 6 4 4 5 6 5 9 7 6 8 6
5

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). MAY 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

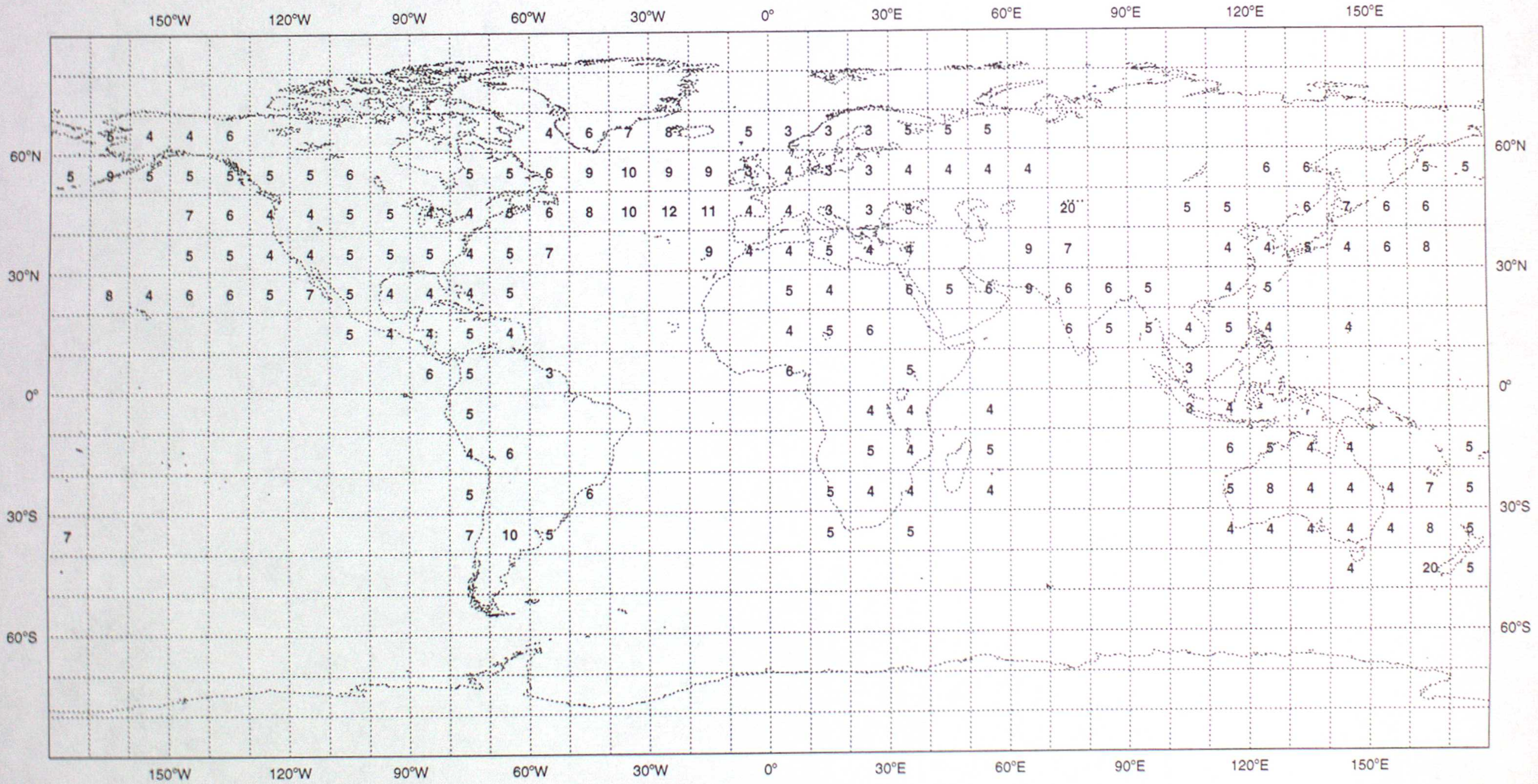

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
5 4 4 6 4 6 7 8 5 3 3 3 5 5 5
5 9 5 5 5 5 5 6 5 5 6 9 10 9 9 4 3 3 4 4 4 4 6 6 5 5
7 6 4 4 5 5 4 4 6 6 8 10 12 11 4 4 3 3 5 20 5 5 6 7 6 6
5 5 4 4 5 5 5 4 5 7 9 4 4 5 4 4 9 7 4 4 5 4 6 8
8 4 6 6 5 7 5 4 4 4 5 5 4 6 5 6 9 6 6 5 4 5
5 4 4 5 4 4 5 6 6 5 5 4 5 4 4
6 5 3 6 5 3
5 4 4 4 3 4
4 6 5 4 5 6 5 4 4 5
5 6 5 4 4 4 5 8 4 4 4 7 5
7 7 10 5 5 5 4 4 4 4 4 8 5
4 20 5

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 30.0 hPa

Element monitored :GEOPOTENTIAL HEIGHT IN metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown duringperiod.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.1

SELECTION CRITERIA : ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
23933	00	Z	30	61/ 69	10	2	85.0	319.1	330.2	6
26477	12	Z	30	56/ 31	13	0	82.6	257.6	270.5	5
28661	12	Z	50	55/ 65	17	0	117.4	120.2	168.0	7
28722	00	Z	30	55/ 56	17	1	94.9	252.2	269.4	4
28722	12	Z	30	55/ 56	25	1	108.2	257.2	279.1	6
32098	00	Z	100	49/ 143	28	2	45.3	170.0	176.0	4
42027	12	Z	1000	34/ 75	22	0	49.5	-40.0	63.6	4
42101	00	Z	30	30/ 76	23	1	137.9	164.4	214.6	8
42101	12	Z	50	30/ 76	16	3	87.4	208.0	225.6	8
42314	00	Z	30	27/ 95	15	3	207.5	228.0	308.3	7
42339	12	Z	150	26/ 73	12	0	93.3	27.2	97.2	4
42369	00	Z	30	27/ 81	16	0	202.8	238.9	313.4	7
42369	12	Z	30	27/ 81	10	1	100.1	235.6	256.0	10
42397	00	Z	300	27/ 88	21	0	61.3	-60.8	86.3	7
42397	12	Z	150	27/ 88	20	0	90.7	-75.3	117.9	9
42492	12	Z	100	26/ 85	13	0	140.1	36.2	144.7	4
42647	00	Z	30	23/ 73	11	2	155.1	231.5	278.7	8
42647	12	Z	70	23/ 73	14	5	102.7	277.2	295.6	11
42667	00	Z	70	23/ 77	11	0	103.4	161.1	191.4	8
42667	12	Z	100	23/ 77	11	0	96.6	180.6	204.9	5
42809	12	Z	150	23/ 88	19	0	103.0	-11.6	103.7	7
42867	00	Z	30	21/ 79	22	0	114.2	186.0	218.3	4
42867	12	Z	70	21/ 79	18	3	168.6	130.8	213.4	8
42971	00	Z	50	20/ 86	22	2	114.4	210.6	239.7	8
42971	12	Z	30	20/ 86	13	0	156.6	217.7	268.2	6
43003	00	Z	70	19/ 73	2	8	44.0	326.0	329.0	7
43003	12	Z	150	19/ 73	6	14	51.4	203.7	210.0	8
43128	00	Z	150	17/ 78	20	0	63.8	-147.4	160.7	6
43192	00	Z	50	15/ 74	11	0	157.2	-30.4	160.1	9
43192	12	Z	100	15/ 74	11	0	113.3	47.2	122.7	4
43279	00	Z	150	13/ 80	25	0	77.9	-113.4	137.6	7
43285	12	Z	100	13/ 75	12	0	62.5	176.2	187.0	7
43333	00	Z	250	12/ 93	23	0	58.4	-55.0	80.2	4
43346	12	Z	50	11/ 80	25	0	87.1	174.8	195.2	4
43369	12	Z	50	8/ 73	15	2	138.8	226.9	266.0	10
43371	12	Z	50	8/ 77	24	0	90.6	158.1	182.2	5
47122	00	Z	50	37/ 127	25	0	32.5	164.8	168.0	4
47185	00	Z	30	33/ 126	22	0	46.0	240.0	244.4	5
53463	00	Z	250	41/ 112	30	0	55.5	81.1	98.3	9
62414	12	Z	50	24/ 33	29	0	30.6	161.7	164.6	4
82332	12	Z	50	-3/ -60	5	0	20.5	172.6	173.8	4
84628	12	Z	850	-12/ -77	13	0	9.4	-70.0	70.6	8
89512	00	Z	30	-71/ 12	21	2	100.1	251.2	270.4	4
91366	00	Z	50	9/ 168	22	1	51.4	270.8	275.7	6
96935	00	Z	250	-7/ 113	6	1	85.9	22.3	88.7	5

Figure 8. TEMP 500 hPa geopotential mean daily count. MAY 2001

All hours

Global average number of observations in 24 hours = 1180

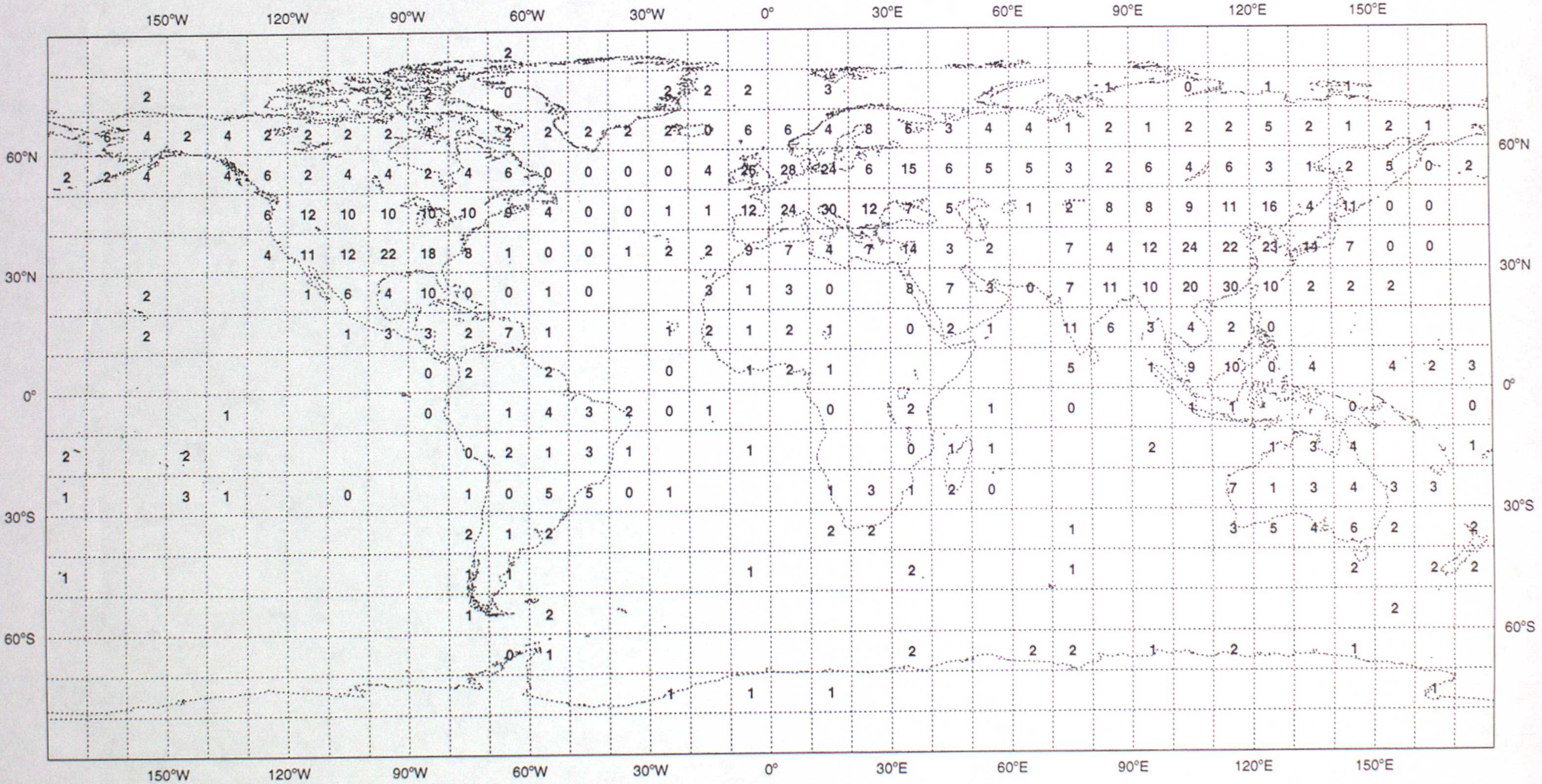

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2
2 2 2 0 2 2 2 3 1 0 1 1
6 4 2 4 2 2 2 2 4 2 2 2 2 2 0 6 6 4 8 6 3 4 4 1 2 1 2 2 5 2 1 2 1
2 2 4 4 6 2 4 4 2 4 6 0 0 0 0 4 26 28 24 6 15 6 5 5 3 2 6 4 6 3 1 2 5 0 2
6 12 10 10 10 10 9 4 0 0 1 1 12 24 30 12 7 5 1 2 8 8 9 11 16 4 11 0 0
4 11 12 22 18 8 1 0 0 1 2 2 9 7 4 7 14 3 2 7 4 12 24 22 23 14 7 0 0
2 1 6 4 10 0 0 1 0 3 1 3 0 8 7 3 0 7 11 10 20 30 10 2 2 2
2 1 3 3 2 7 1 1 2 1 2 1 0 2 1 11 6 3 4 2 0
0 2 2 0 1 2 1 5 1 9 10 0 4 4 2 3
1 0 1 4 3 2 0 1 0 2 1 0 1 1 0 0
2 2 0 2 1 3 1 1 0 1 1 2 1 3 4 1
1 3 1 0 1 0 5 5 0 1 1 3 1 2 0 7 1 3 4 3 3
2 1 2 2 2 1 3 5 4 6 2 2
1 1 1 1 2 1 2 2 2
1 2 2
0 1 2 2 2 1 2 1
1 1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 100.0 hPa
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.2	
SELECTION CRITERIA	: ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.	

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
PSPIU	00	V	150	-5/ -81	26	0	100	2.3	3.7	21.1	3
PSPIU	12	V	150	-5/ -81	27	0	100	-2.7	1.0	23.4	3
40706	00	V	150	38/ 46	11	0	9	-5.0	-2.0	18.7	1
42410	12	V	100	26/ 92	12	0	100	1.4	0.5	16.9	1
42724	00	V	300	24/ 91	15	0	100	5.5	-4.7	17.8	3
60360	12	V	200	37/ 8	20	0	100	0.9	-4.1	16.0	1
62337	00	V	150	31/ 34	29	0	100	-6.4	11.2	15.4	1
62337	12	V	200	31/ 34	30	0	100	-4.5	11.5	15.7	1
68174	12	V	150	-24/ 29	21	0	14	-14.1	-1.1	17.6	1
68240	00	V	150	-24/ 26	20	0	5	-0.7	-2.5	17.6	1
68263	12	V	150	-26/ 28	12	0	16	-14.3	-2.2	18.0	2
68461	12	V	150	-28/ 28	15	0	13	-7.3	-0.8	20.1	2
68512	12	V	150	-30/ 18	20	0	60	-12.2	-5.0	17.9	1
68588	12	V	200	-30/ 31	9	1	11	3.4	-5.9	19.3	1
68842	12	V	200	-34/ 26	13	0	23	-11.7	-3.4	18.9	2
72206	12	V	200	30/ -82	31	0	3	-2.5	-1.0	16.9	3
76225	00	V	250	29/-106	26	0	7	-1.2	2.9	15.3	1
83362	00	V	200	-16/ -56	9	0	11	-3.8	0.2	15.7	1
83612	00	V	200	-20/ -55	22	0	100	2.4	-4.6	20.8	2
83612	12	V	150	-20/ -55	25	0	100	-13.0	-3.5	33.0	5
85586	12	V	150	-34/ -72	28	0	3	-3.6	1.4	20.8	1
87155	12	V	150	-27/ -59	25	1	4	-4.4	1.7	21.3	2
96413	00	V	100	1/ 110	12	0	8	10.1	-4.0	15.3	1

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. MAY 2001
All hours
Global average number of observations in 24 hours = 1420

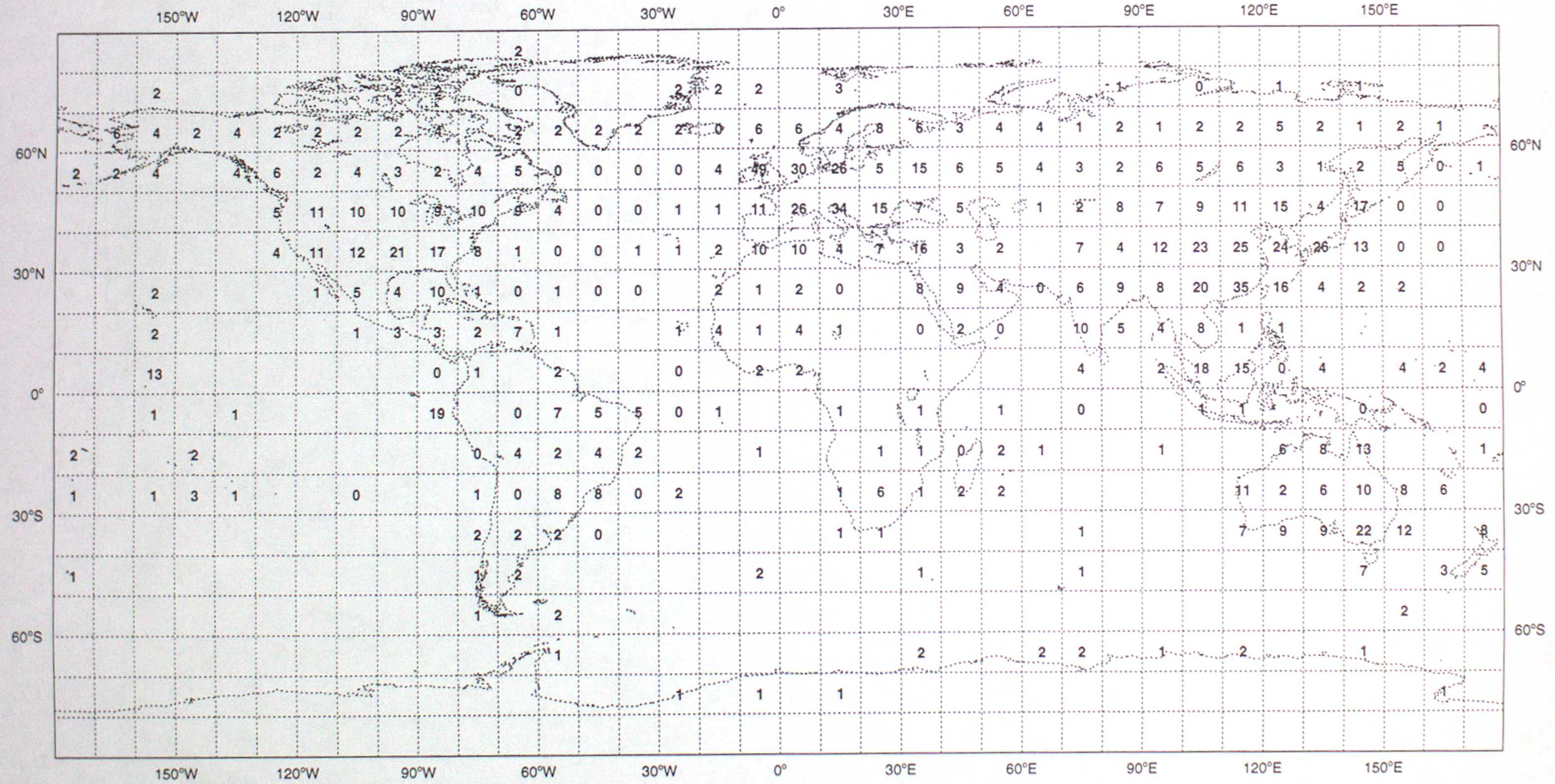

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
10828	00	DD	48/ 9	13	11.8	6.5	12.1
17280	00	DD	38/ 40	29	-11.8	5.8	12.5
17280	12	DD	38/ 40	28	-14.5	4.8	12.1
29612	12	DD	55/ 78	27	25.3	7.2	10.5
43041	00	DD	19/ 82	17	11.4	7.6	23.4
48455	00	DD	14/ 101	13	13.6	7.3	23.3
54161	12	DD	44/ 125	29	10.1	10.0	21.3
57749	00	DD	28/ 110	28	10.1	7.5	12.3
57749	12	DD	28/ 110	29	10.4	4.2	9.0
59134	12	DD	24/ 118	28	10.0	3.5	12.0
60360	12	DD	37/ 8	21	16.4	4.1	11.1
62337	00	DD	31/ 34	27	-23.9	2.2	6.9
62337	12	DD	31/ 34	28	-22.4	3.1	9.0
78866	12	DD	18/ -63	10	-10.0	6.7	14.1

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: May 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

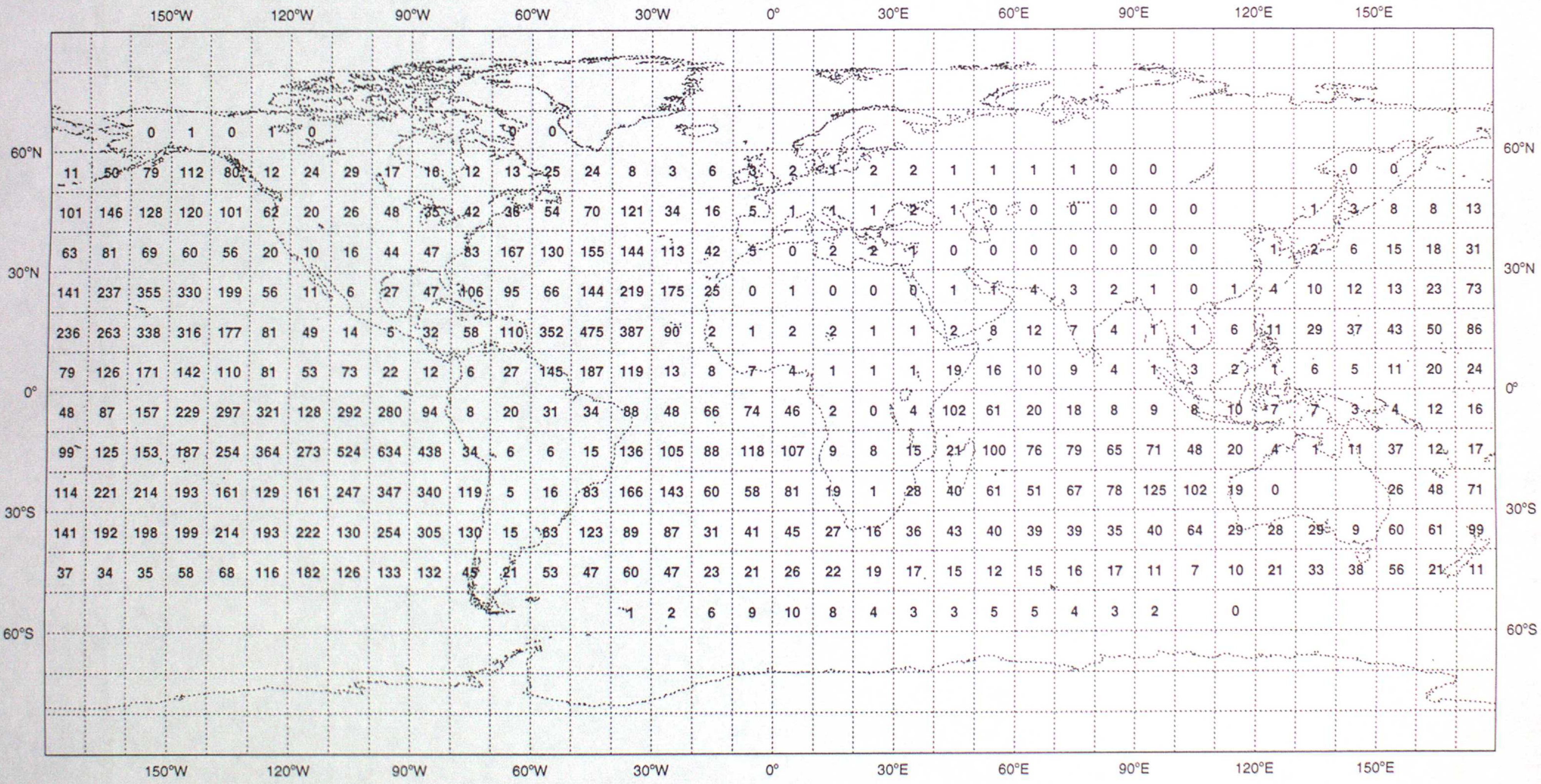
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. MAY 2001
Global average number of observations in 24 hours = 25849



		0	1	0	1	0					0	0																							
11	50	79	112	80	12	24	29	17	18	12	13	25	24	8	3	6	3	2	1	2	2	1	1	1	1	0	0					0	0		
101	146	128	120	101	62	20	26	48	35	42	36	54	70	121	34	16	5	1	1	1	2	1	0	0	0	0	0	0			1	3	8	8	13
63	81	69	60	56	20	10	16	44	47	83	167	130	155	144	113	42	5	0	2	2	1	0	0	0	0	0	0	0		1	2	6	15	18	31
141	237	355	330	199	56	11	6	27	47	106	95	66	144	219	175	25	0	1	0	0	0	1	1	4	3	2	1	0	1	4	10	12	13	23	73
236	263	338	316	177	81	49	14	5	32	58	110	352	475	387	90	2	1	2	2	1	1	2	8	12	7	4	1	1	6	11	29	37	43	50	86
79	126	171	142	110	81	53	73	22	12	6	27	145	187	119	13	8	7	4	1	1	1	19	16	10	9	4	1	3	2	1	6	5	11	20	24
48	87	157	229	297	321	128	292	280	94	8	20	31	34	88	48	66	74	46	2	0	4	102	61	20	18	8	9	8	10	7	7	3	4	12	16
99	125	153	187	254	364	273	524	634	438	34	6	6	15	136	105	88	118	107	9	8	15	21	100	76	79	65	71	48	20	4	1	11	37	12	17
114	221	214	193	161	129	161	247	347	340	119	5	16	83	166	143	60	58	81	19	1	28	40	61	51	67	78	125	102	19	0			26	48	71
141	192	198	199	214	193	222	130	254	305	130	15	63	123	89	87	31	41	45	27	16	36	43	40	39	39	35	40	64	29	28	29	9	60	61	99
37	34	35	58	68	116	182	126	133	132	45	21	53	47	60	47	23	21	26	22	19	17	15	12	15	16	17	11	7	10	21	33	38	56	21	11
														1	2	6	9	10	8	4	3	3	5	5	4	3	2		0						

Figure 11. SATOB 701 - 1000 hPa vector mean wind. MAY 2001
All observations
Arrows are plotted where greater than 10 obs are present

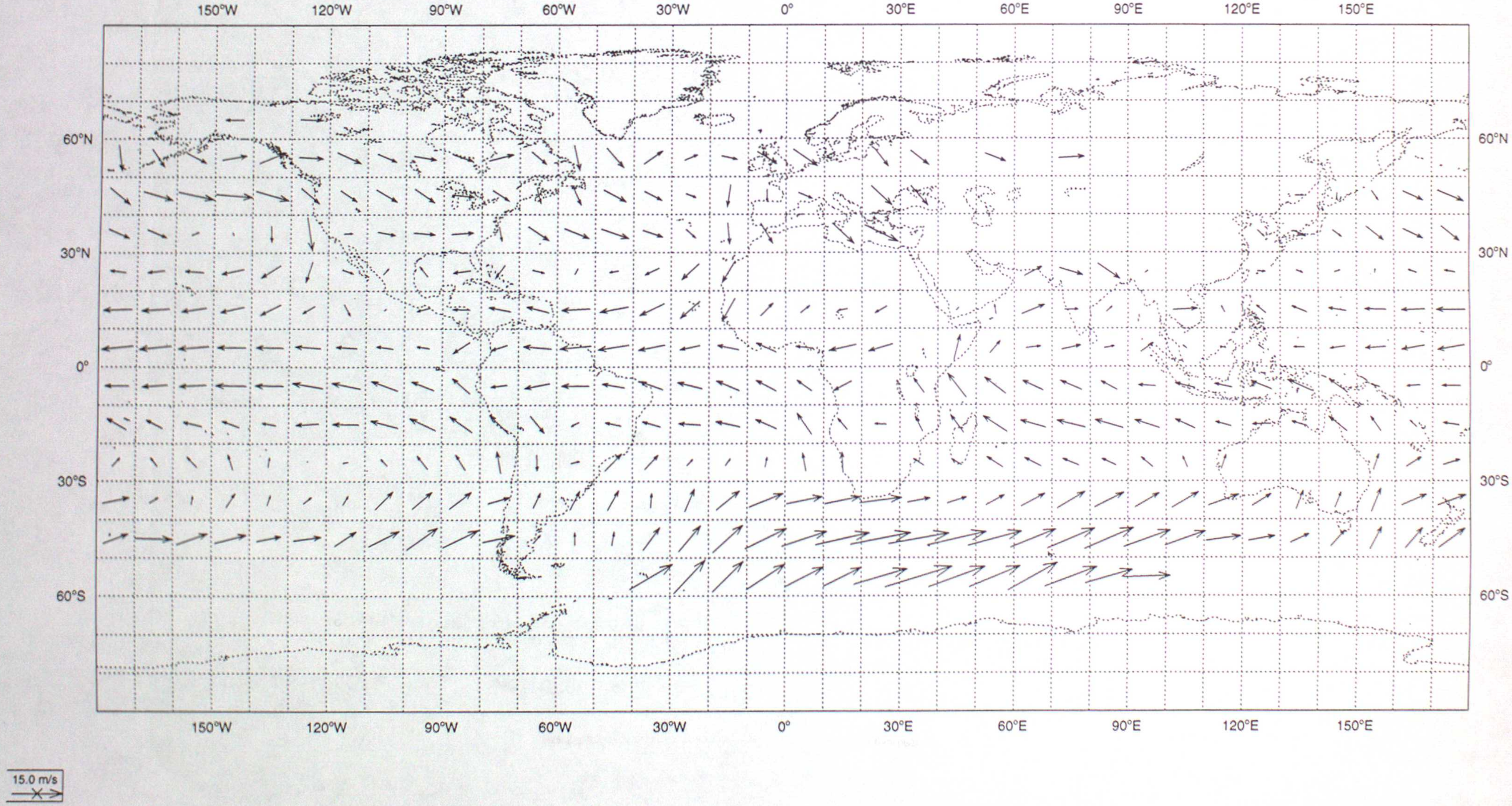

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 12. SATOB 701 - 1000 hPa vector wind differences. MAY 2001

All observations

Arrows are plotted where greater than 10 obs are present

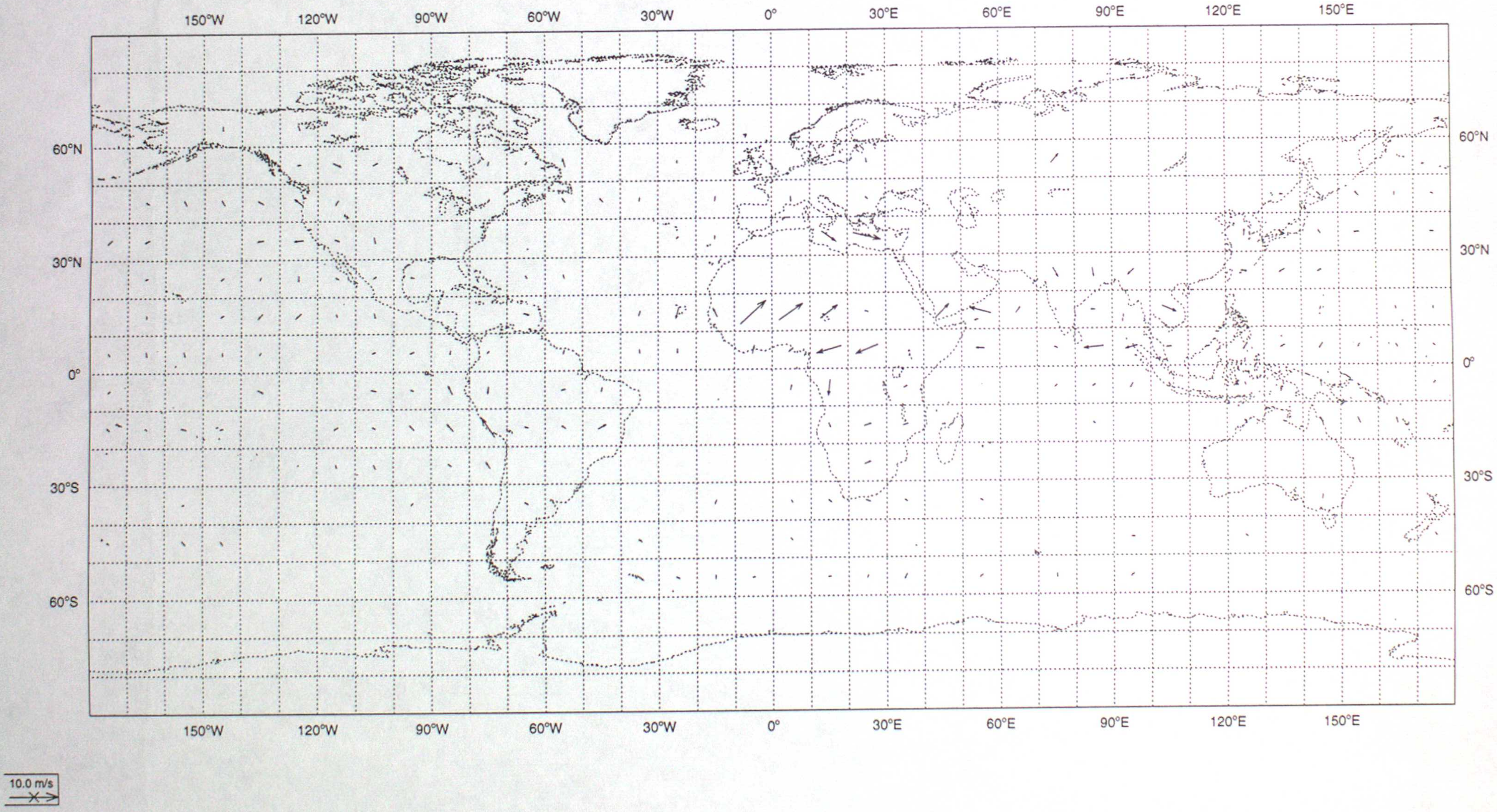

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). MAY 2001

All observations

Values are plotted where greater than 10 obs are present

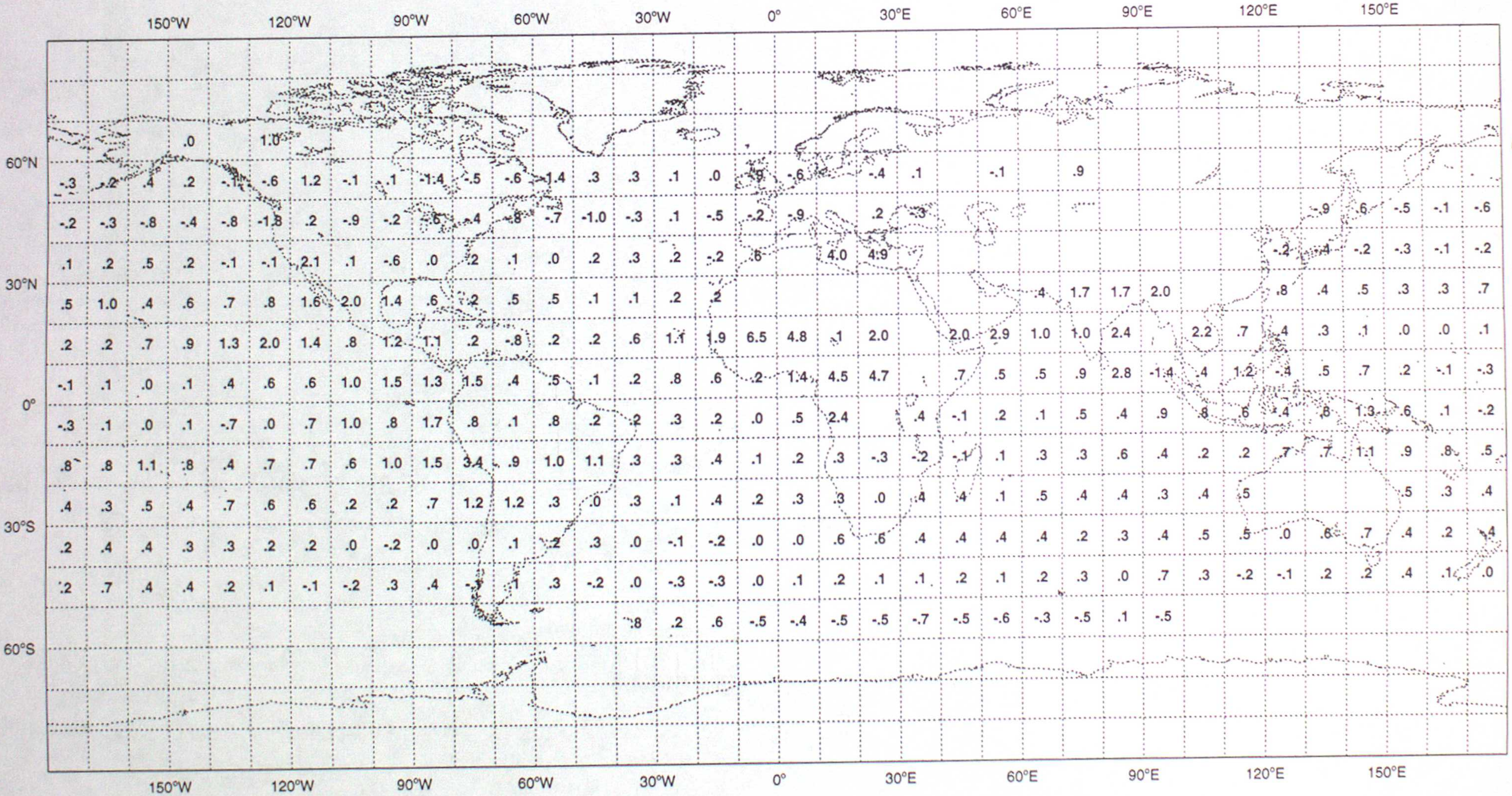

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.0 1.0
-.3 .2 .4 .2 -.1 -.6 1.2 -.1 .1 -1.4 -.5 -.6 -1.4 .3 .3 .1 .0 -.9 -.6 -.4 .1 -.1 .9
-.2 -.3 -.8 -.4 -.8 -1.8 .2 -.9 -.2 -.6 -.4 -.8 -.7 -1.0 -.3 .1 -.5 -.2 -.9 .2 -.3 -.9 .6 -.5 -.1 -.6
.1 .2 .5 .2 -.1 -.1 2.1 .1 -.6 .0 .2 .1 .0 .2 .3 .2 -.2 .6 4.0 4.9 -.2 -.4 -.2 -.3 -.1 -.2
.5 1.0 .4 .6 .7 .8 1.6 2.0 1.4 .6 .2 .5 .5 .1 .1 .2 .2 .4 1.7 1.7 2.0 .8 .4 .5 .3 .3 .7
.2 .2 .7 .9 1.3 2.0 1.4 .8 1.2 1.1 .2 -.8 .2 .2 .6 1.1 1.9 6.5 4.8 .1 2.0 2.0 2.9 1.0 1.0 2.4 2.2 .7 .4 .3 .1 .0 .0 .1
-.1 .1 .0 .1 .4 .6 .6 1.0 1.5 1.3 1.5 .4 .5 .1 .2 .8 .6 .2 1.4 4.5 4.7 .7 .5 .5 .9 2.8 -1.4 .4 1.2 -.4 .5 .7 .2 -.1 -.3
-.3 .1 .0 .1 -.7 .0 .7 1.0 .8 1.7 .8 .1 .8 .2 .2 .3 .2 .0 .5 2.4 .4 -.1 .2 .1 .5 .4 .9 .8 .6 .4 .8 1.3 .6 .1 -.2
.8 .8 1.1 .8 .4 .7 .7 .6 1.0 1.5 3.4 .9 1.0 1.1 .3 .3 .4 .1 .2 .3 -.3 -.2 -.1 .1 .3 .3 .6 .4 .2 .2 .7 .7 1.1 .9 .8 .5
.4 .3 .5 .4 .7 .6 .6 .2 .2 .7 1.2 1.2 .3 .0 .3 .1 .4 .2 .3 .3 .0 .4 .4 .1 .5 .4 .4 .3 .4 .5 .5 .3 .4
.2 .4 .4 .3 .3 .2 .2 .0 -.2 .0 .0 .1 .2 .3 .0 -.1 -.2 .0 .0 .6 .6 .4 .4 .4 .4 .2 .3 .4 .5 .5 .0 .6 .7 .4 .2 .4
.2 .7 .4 .4 .2 .1 -.1 -.2 .3 .4 -.1 .1 .3 -.2 .0 -.3 -.3 .0 .1 .2 .1 .1 .2 .1 .2 .3 .0 .7 .3 -.2 -.1 .2 .2 .4 .1 .0
.8 .2 .6 -.5 -.4 -.5 -.5 -.7 -.5 -.6 -.3 -.5 .1 -.5

Figure 14. SATOB 701 - 1000 hPa RMS O-B vector differences (ms-1). MAY 2001

All observations

Values are plotted where greater than 10 obs are present

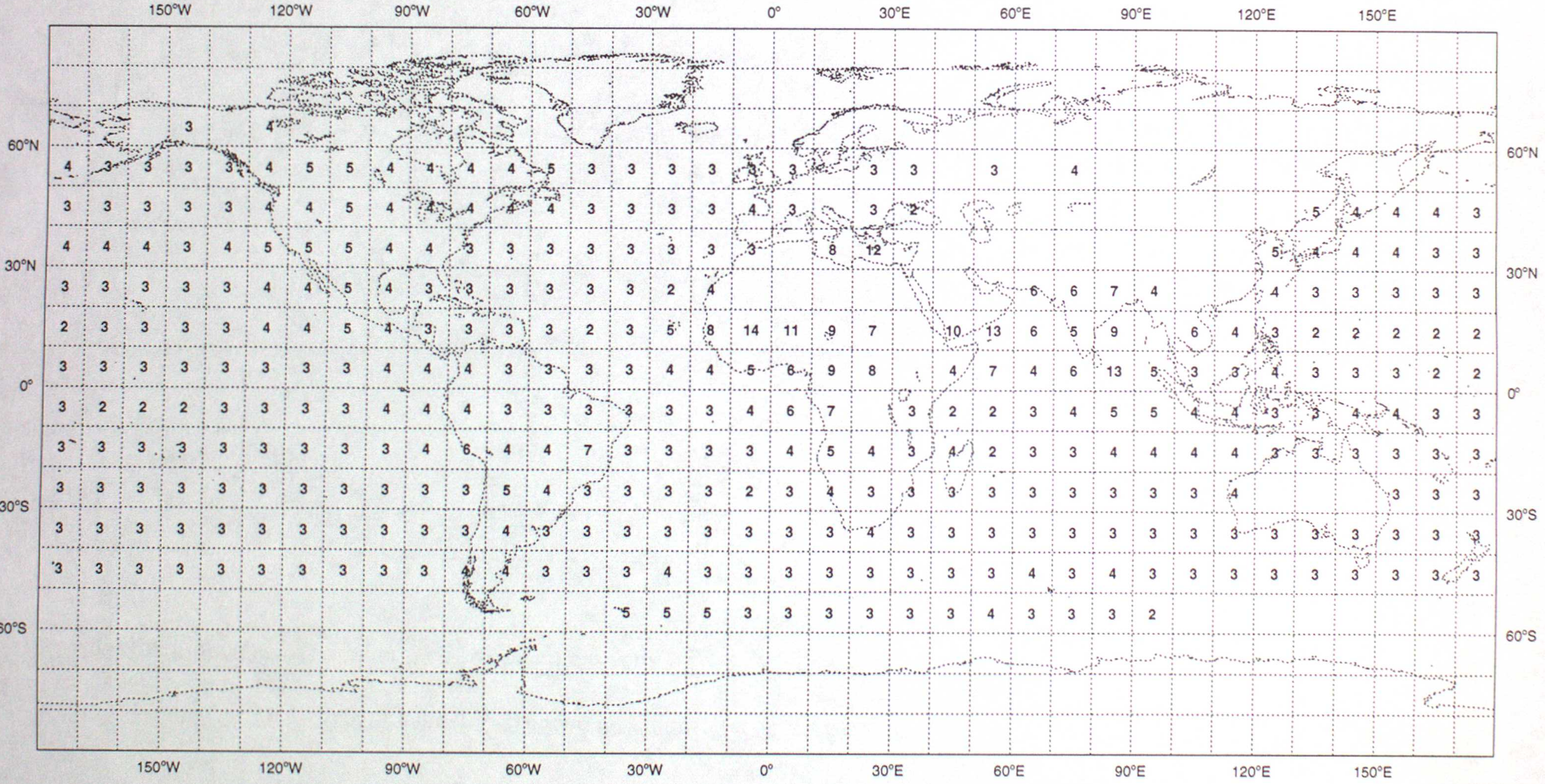
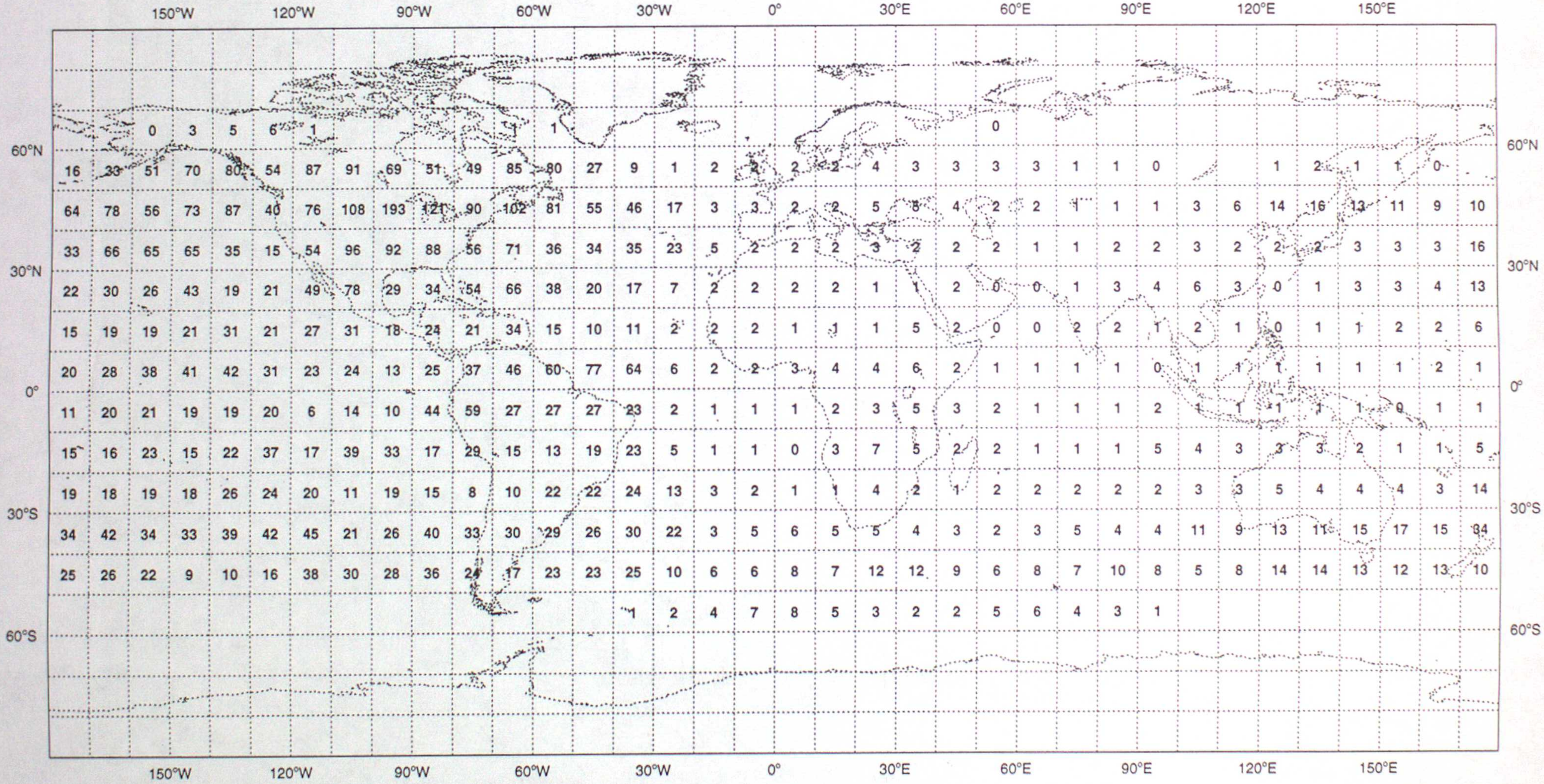

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
3 4
4 3 3 3 3 4 5 5 4 4 4 4 5 3 3 3 3 3 3 3 3 3 4
3 3 3 3 3 4 4 5 4 4 4 4 4 3 3 3 3 4 3 3 2 5 4 4 4 3
4 4 4 3 4 5 5 5 4 4 3 3 3 3 3 3 3 3 8 12 5 4 4 4 3 3
3 3 3 3 3 4 4 5 4 3 3 3 3 3 3 2 4 6 6 7 4 4 3 3 3 3 3
2 3 3 3 3 4 4 5 4 3 3 3 3 2 3 5 8 14 11 9 7 10 13 6 5 9 6 4 3 2 2 2 2 2
3 3 3 3 3 3 3 3 4 4 4 3 3 3 3 4 4 5 6 9 8 4 7 4 6 13 5 3 3 4 3 3 3 2 2
3 2 2 2 3 3 3 3 4 4 4 3 3 3 3 3 3 4 6 7 3 2 2 3 4 5 5 4 4 3 3 4 4 3 3
3 3 3 3 3 3 3 3 3 4 6 4 4 7 3 3 3 3 4 5 4 3 4 2 3 3 4 4 4 4 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 5 4 3 3 3 3 2 3 4 3 3 3 3 3 3 3 3 3 4 3 3 3
3 3 3 3 3 3 3 3 3 3 3 4 3 3 3 3 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 4 4 3 3 3 4 3 3 3 3 3 3 3 3 4 3 4 3 3 3 3 3 3 3 3 3
5 5 5 3 3 3 3 3 3 4 3 3 3 2

Figure 15. SATOB 401 - 700 hPa mean daily count. MAY 2001
Global average number of observations in 24 hours = 7218



		0	3	5	6	1					1	1											0												
16	33	51	70	80	54	87	91	69	51	49	85	80	27	9	1	2	2	2	2	4	3	3	3	3	1	1	0			1	2	1	1	0	
64	78	56	73	87	40	76	108	193	121	90	102	81	55	46	17	3	3	2	2	5	8	4	2	2	1	1	1	3	6	14	16	13	11	9	10
33	66	65	65	35	15	54	96	92	88	56	71	36	34	35	23	5	2	2	2	3	2	2	2	1	1	2	2	3	2	2	2	3	3	3	16
22	30	26	43	19	21	49	78	29	34	54	66	38	20	17	7	2	2	2	2	1	1	2	0	0	1	3	4	6	3	0	1	3	3	4	13
15	19	19	21	31	21	27	31	18	24	21	34	15	10	11	2	2	2	1	1	1	5	2	0	0	2	2	1	2	1	0	1	1	2	2	6
20	28	38	41	42	31	23	24	13	25	37	46	60	77	64	6	2	2	3	4	4	6	2	1	1	1	1	0	1	1	1	1	1	1	2	1
11	20	21	19	19	20	6	14	10	44	59	27	27	27	23	2	1	1	1	2	3	5	3	2	1	1	1	2	1	1	1	1	1	0	1	1
15	16	23	15	22	37	17	39	33	17	29	15	13	19	23	5	1	1	0	3	7	5	2	2	1	1	1	5	4	3	3	3	2	1	1	5
19	18	19	18	26	24	20	11	19	15	8	10	22	22	24	13	3	2	1	1	4	2	1	2	2	2	2	2	3	3	5	4	4	4	3	14
34	42	34	33	39	42	45	21	26	40	33	30	29	26	30	22	3	5	6	5	5	4	3	2	3	5	4	4	11	9	13	11	15	17	15	34
25	26	22	9	10	16	38	30	28	36	24	17	23	23	25	10	6	6	8	7	12	12	9	6	8	7	10	8	5	8	14	14	13	12	13	10
														1	2	4	7	8	5	3	2	2	5	6	4	3	1								

Figure 16. SATOB 401 - 700 hPa vector mean wind. MAY 2001
All observations
Arrows are plotted where greater than 10 obs are present

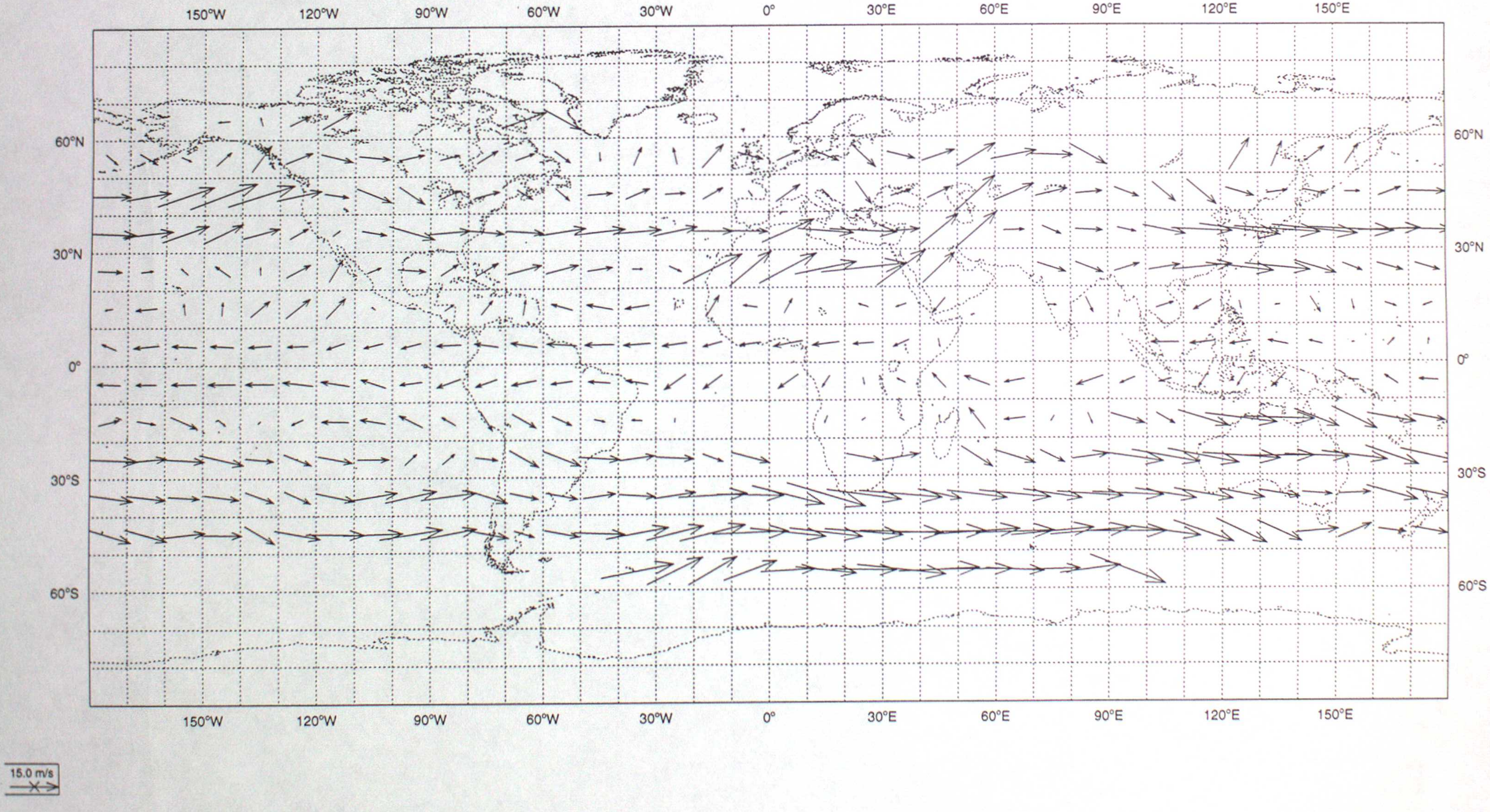

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 17. SATOB 401 - 700 hPa vector wind differences. MAY 2001

All observations

Arrows are plotted where greater than 10 obs are present

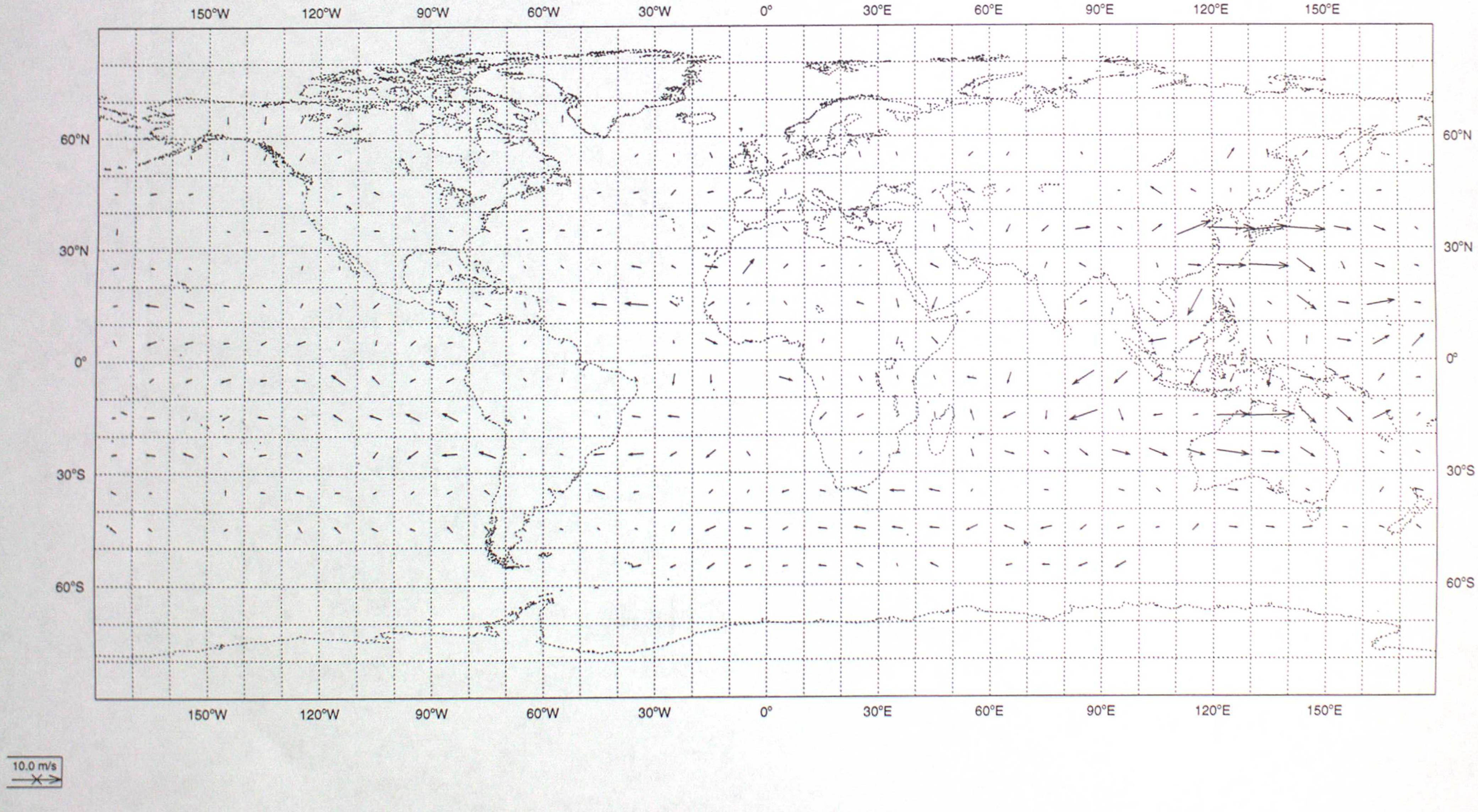

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). MAY 2001
All observations
Values are plotted where greater than 10 obs are present

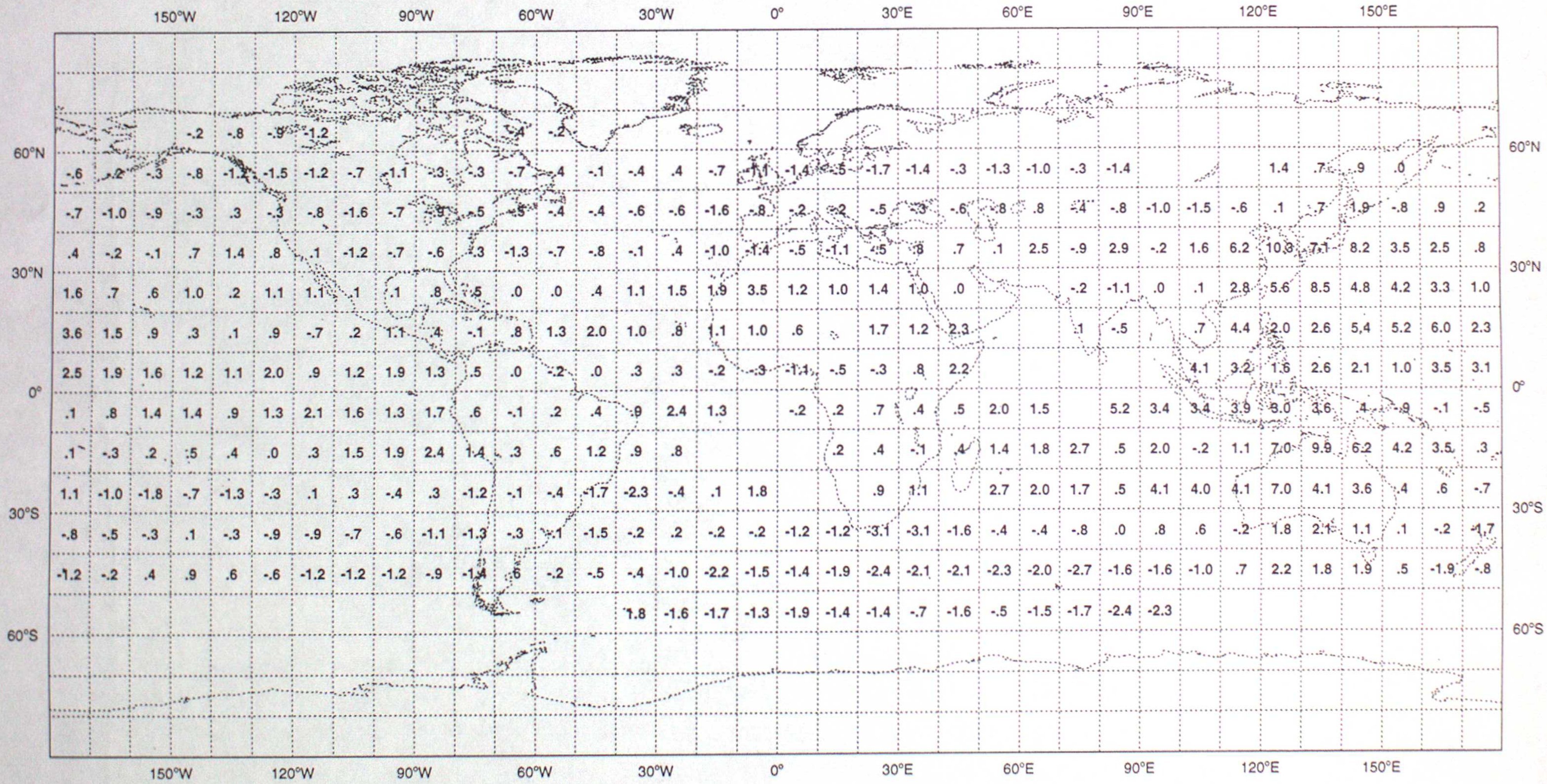
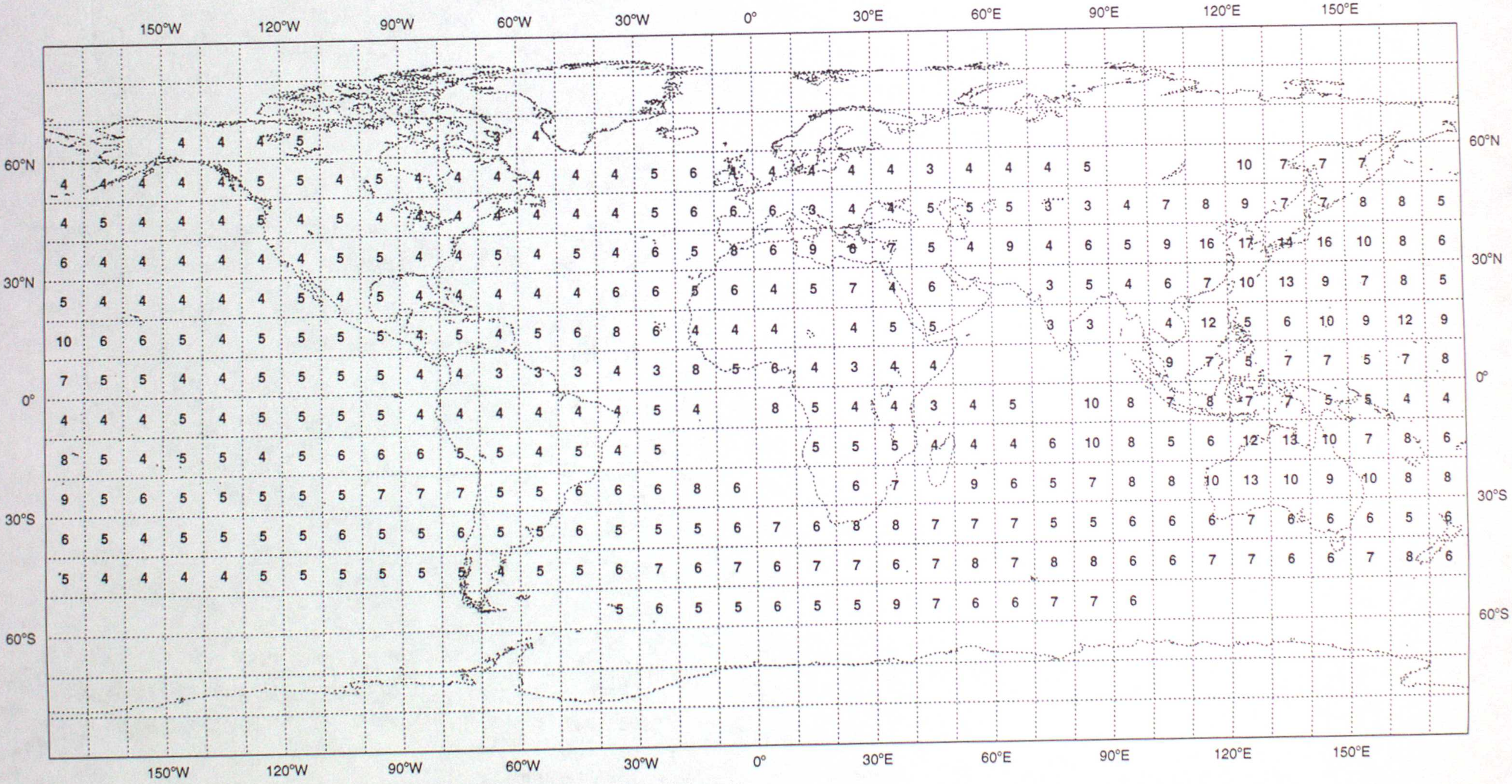

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-.2 -.8 -.9 -1.2 -.4 -.2
-.6 -.2 -.3 -.8 -1.2 -1.5 -1.2 -.7 -1.1 -.3 -.3 -.7 -.4 -.1 -.4 .4 -.7 -1.1 -1.4 -.5 -1.7 -1.4 -.3 -1.3 -1.0 -.3 -1.4 1.4 .7 .9 .0
-.7 -1.0 -.9 -.3 .3 -.3 -.8 -1.6 -.7 -.9 -.5 -.5 -.4 -.4 -.6 -.6 -1.6 -.8 -.2 -.2 -.5 -.3 -.6 -.8 .8 -.4 -.8 -1.0 -1.5 -.6 .1 .7 1.9 -.8 .9 .2
.4 -.2 -.1 .7 1.4 .8 .1 -1.2 -.7 -.6 -.3 -1.3 -.7 -.8 -.1 .4 -1.0 -1.4 -.5 -1.1 -.5 .8 .7 .1 2.5 -.9 2.9 -.2 1.6 6.2 10.3 7.1 8.2 3.5 2.5 .8
1.6 .7 .6 1.0 .2 1.1 1.1 .1 .1 .8 .5 .0 .0 .4 1.1 1.5 1.9 3.5 1.2 1.0 1.4 1.0 .0 -.2 -1.1 .0 .1 2.8 5.6 8.5 4.8 4.2 3.3 1.0
3.6 1.5 .9 .3 .1 .9 -.7 .2 1.1 .4 -.1 .8 1.3 2.0 1.0 .8 1.1 1.0 .6 1.7 1.2 2.3 .1 -.5 .7 4.4 2.0 2.6 5.4 5.2 6.0 2.3
2.5 1.9 1.6 1.2 1.1 2.0 .9 1.2 1.9 1.3 .5 .0 -.2 .0 .3 .3 -.2 -.3 -1.1 -.5 -.3 .8 2.2 4.1 3.2 1.6 2.6 2.1 1.0 3.5 3.1
.1 .8 1.4 1.4 .9 1.3 2.1 1.6 1.3 1.7 .6 -.1 .2 .4 .9 2.4 1.3 -.2 .2 .7 .4 .5 2.0 1.5 5.2 3.4 3.4 3.9 3.0 3.6 .4 -.9 -.1 -.5
.1 -.3 .2 .5 .4 .0 .3 1.5 1.9 2.4 1.4 .3 .6 1.2 .9 .8 .2 .4 -.1 .4 1.4 1.8 2.7 .5 2.0 -.2 1.1 7.0 9.9 6.2 4.2 3.5 .3
1.1 -1.0 -1.8 -.7 -1.3 -.3 .1 .3 -.4 .3 -1.2 -.1 -.4 -1.7 -2.3 -.4 .1 1.8 .9 1.1 2.7 2.0 1.7 .5 4.1 4.0 4.1 7.0 4.1 3.6 .4 .6 -.7
-.8 -.5 -.3 .1 -.3 -.9 -.9 -.7 -.6 -1.1 -1.3 -.3 -.1 -1.5 -.2 .2 -.2 -.2 -1.2 -1.2 -3.1 -3.1 -1.6 -.4 -.4 -.8 .0 .8 .6 -.2 1.8 2.1 1.1 .1 -.2 -1.7
-1.2 -.2 .4 .9 .6 -.6 -1.2 -1.2 -1.2 -.9 -1.4 .6 -.2 -.5 -.4 -1.0 -2.2 -1.5 -1.4 -1.9 -2.4 -2.1 -2.1 -2.3 -2.0 -2.7 -1.6 -1.6 -1.0 .7 2.2 1.8 1.9 .5 -1.9 -.8
1.8 -1.6 -1.7 -1.3 -1.9 -1.4 -1.4 -.7 -1.6 -.5 -1.5 -1.7 -2.4 -2.3

Figure 19. SATOB 401 - 700 hPa RMS O-B vector differences (ms-1). MAY 2001

All observations

Values are plotted where greater than 10 obs are present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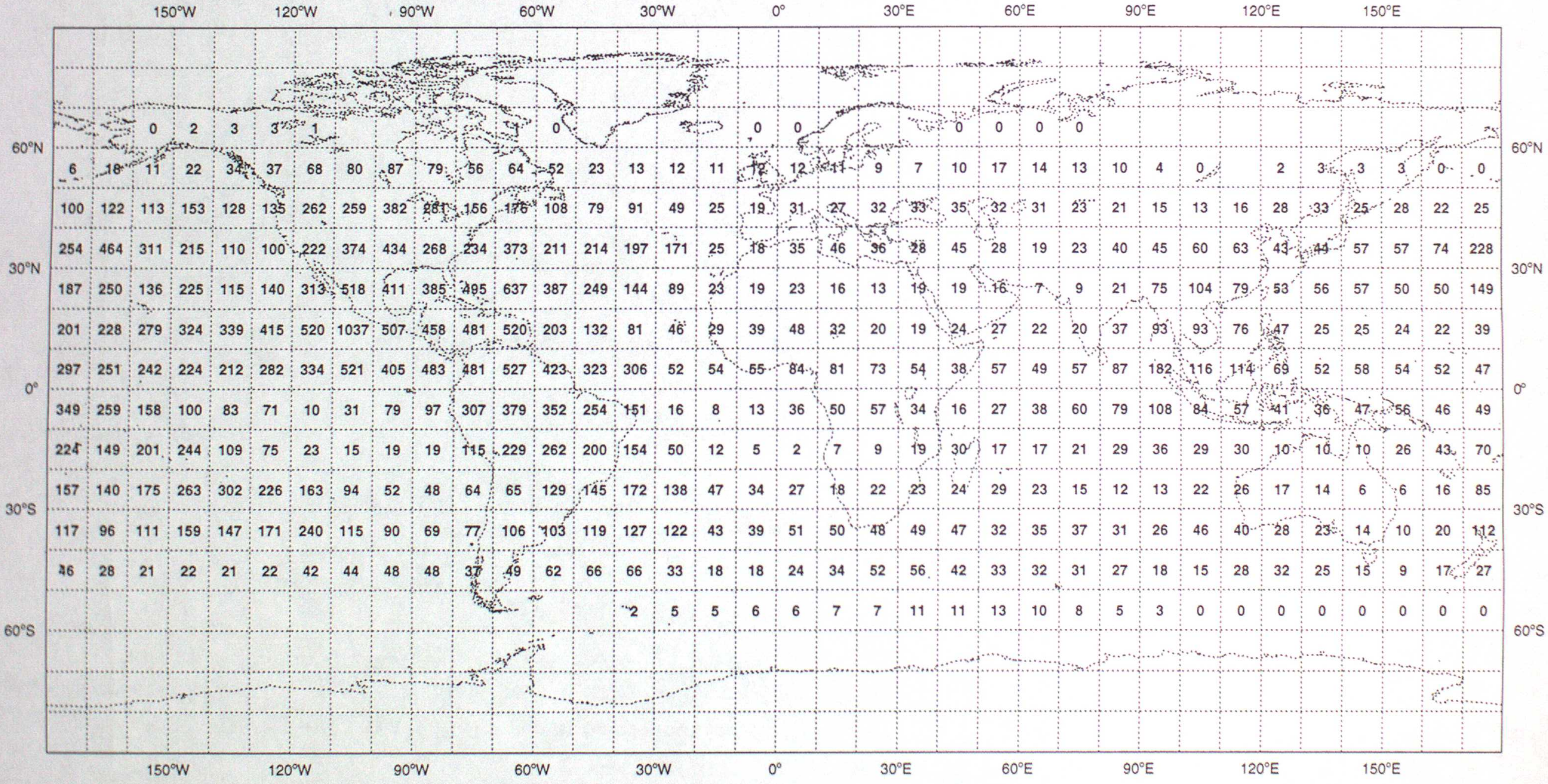
60°N 30°N 0° 30°S 60°S
4 4 4 5 3 4
4 4 4 4 4 5 5 4 5 4 4 4 4 4 4 4 5 6 4 4 4 4 4 3 4 4 4 5 10 7 7 7
4 5 4 4 4 5 4 5 4 4 4 4 4 5 6 6 6 3 4 4 5 5 5 3 3 4 7 8 9 7 7 8 8 5
6 4 4 4 4 4 4 5 5 4 4 5 4 5 4 6 5 8 6 9 6 7 5 4 9 4 6 5 9 16 17 14 16 10 8 6
5 4 4 4 4 4 5 4 5 4 4 4 4 4 6 6 5 6 4 5 7 4 6 3 5 4 6 7 10 13 9 7 8 5
10 6 6 5 4 5 5 5 5 4 5 4 5 6 8 6 4 4 4 4 5 5 3 3 4 12 5 6 10 9 12 9
7 5 5 4 4 5 5 5 5 4 4 3 3 3 4 3 8 5 6 4 3 4 4 9 7 5 7 7 5 7 8
4 4 4 5 4 5 5 5 5 4 4 4 4 4 4 5 4 8 5 4 4 3 4 5 10 8 7 8 7 7 5 5 4 4
8 5 4 5 5 4 5 6 6 6 5 5 4 5 4 5 5 5 5 4 4 4 6 10 8 5 6 12 13 10 7 8 6
9 5 6 5 5 5 5 5 7 7 7 5 5 6 6 6 8 6 6 7 9 6 5 7 8 8 10 13 10 9 10 8 8
6 5 4 5 5 5 5 6 5 5 6 5 5 6 5 5 5 6 7 6 8 8 7 7 7 5 5 6 6 6 7 6 6 6 5 6
5 4 4 4 4 5 5 5 5 5 5 4 5 5 6 7 6 7 6 7 7 6 7 8 7 8 8 6 6 7 7 6 6 7 8 6
5 6 5 5 6 5 5 9 7 6 6 7 7 6

Figure 20. SATOB 101 - 400 hPa mean daily count. MAY 2001
Global average number of observations in 24 hours = 40981



		0	2	3	3	1					1	0					0	0				0	0	0	0										
6	18	11	22	34	37	68	80	87	79	56	64	52	23	13	12	11	12	12	11	9	7	10	17	14	13	10	4	0		2	3	3	3	0	0
100	122	113	153	128	135	262	259	382	261	156	176	108	79	91	49	25	19	31	27	32	33	35	32	31	23	21	15	13	16	28	33	25	28	22	25
254	464	311	215	110	100	222	374	434	268	234	373	211	214	197	171	25	18	35	46	36	28	45	28	19	23	40	45	60	63	43	44	57	57	74	228
187	250	136	225	115	140	313	518	411	385	495	637	387	249	144	89	23	19	23	16	13	19	19	16	7	9	21	75	104	79	53	56	57	50	50	149
201	228	279	324	339	415	520	1037	507	458	481	520	203	132	81	46	29	39	48	32	20	19	24	27	22	20	37	93	93	76	47	25	25	24	22	39
297	251	242	224	212	282	334	521	405	483	481	527	423	323	306	52	54	55	84	81	73	54	38	57	49	57	87	182	116	114	69	52	58	54	52	47
349	259	158	100	83	71	10	31	79	97	307	379	352	254	151	16	8	13	36	50	57	34	16	27	38	60	79	108	84	57	41	36	47	56	46	49
224	149	201	244	109	75	23	15	19	19	115	229	262	200	154	50	12	5	2	7	9	19	30	17	17	21	29	36	29	30	10	10	10	26	43	70
157	140	175	263	302	226	163	94	52	48	64	65	129	145	172	138	47	34	27	18	22	23	24	29	23	15	12	13	22	26	17	14	6	6	16	85
117	96	111	159	147	171	240	115	90	69	77	106	103	119	127	122	43	39	51	50	48	49	47	32	35	37	31	26	46	40	28	23	14	10	20	112
46	28	21	22	21	22	42	44	48	48	37	49	62	66	66	33	18	18	24	34	52	56	42	33	32	31	27	18	15	28	32	25	15	9	17	27
														2	5	5	6	6	7	7	11	11	13	10	8	5	3	0	0	0	0	0	0	0	0

Figure 21. SATOB 101 - 400 hPa vector mean wind. MAY 2001

All observations

Arrows are plotted where greater than 10 obs are present

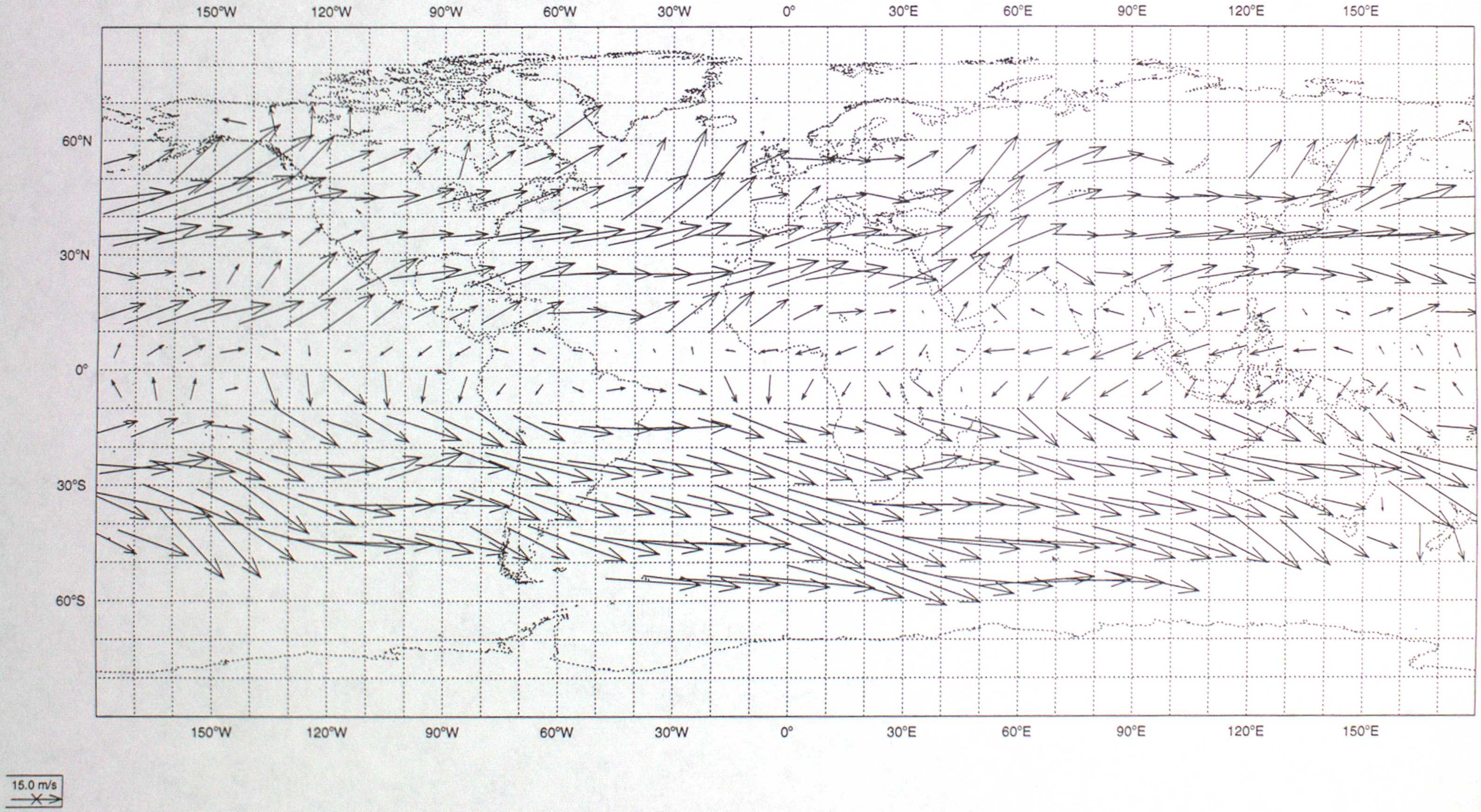

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 22. SATOB 101 - 400 hPa vector wind differences. MAY 2001

All observations

Arrows are plotted where greater than 10 obs are present

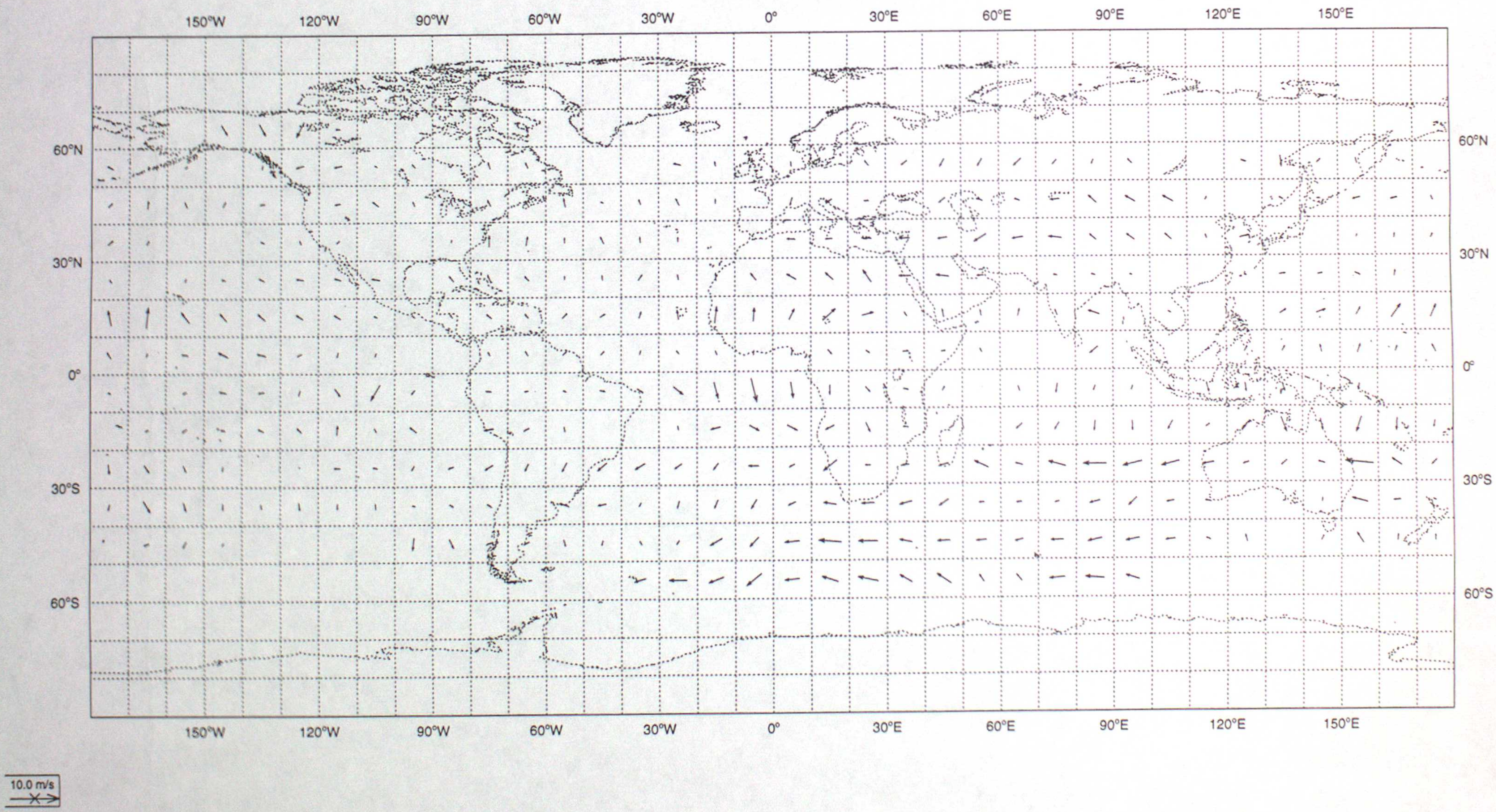

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). MAY 2001
All observations
Values are plotted where greater than 10 obs are present

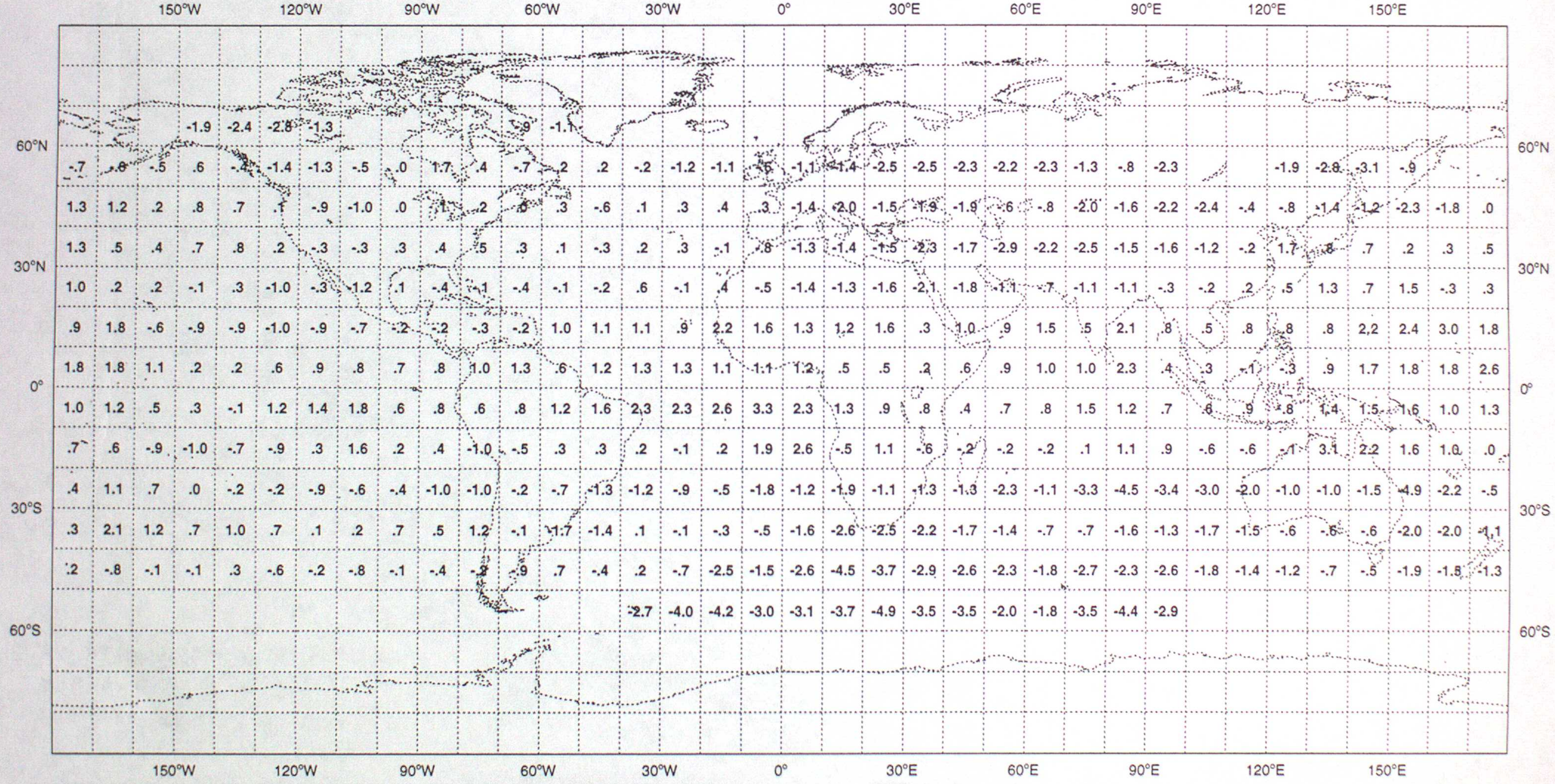
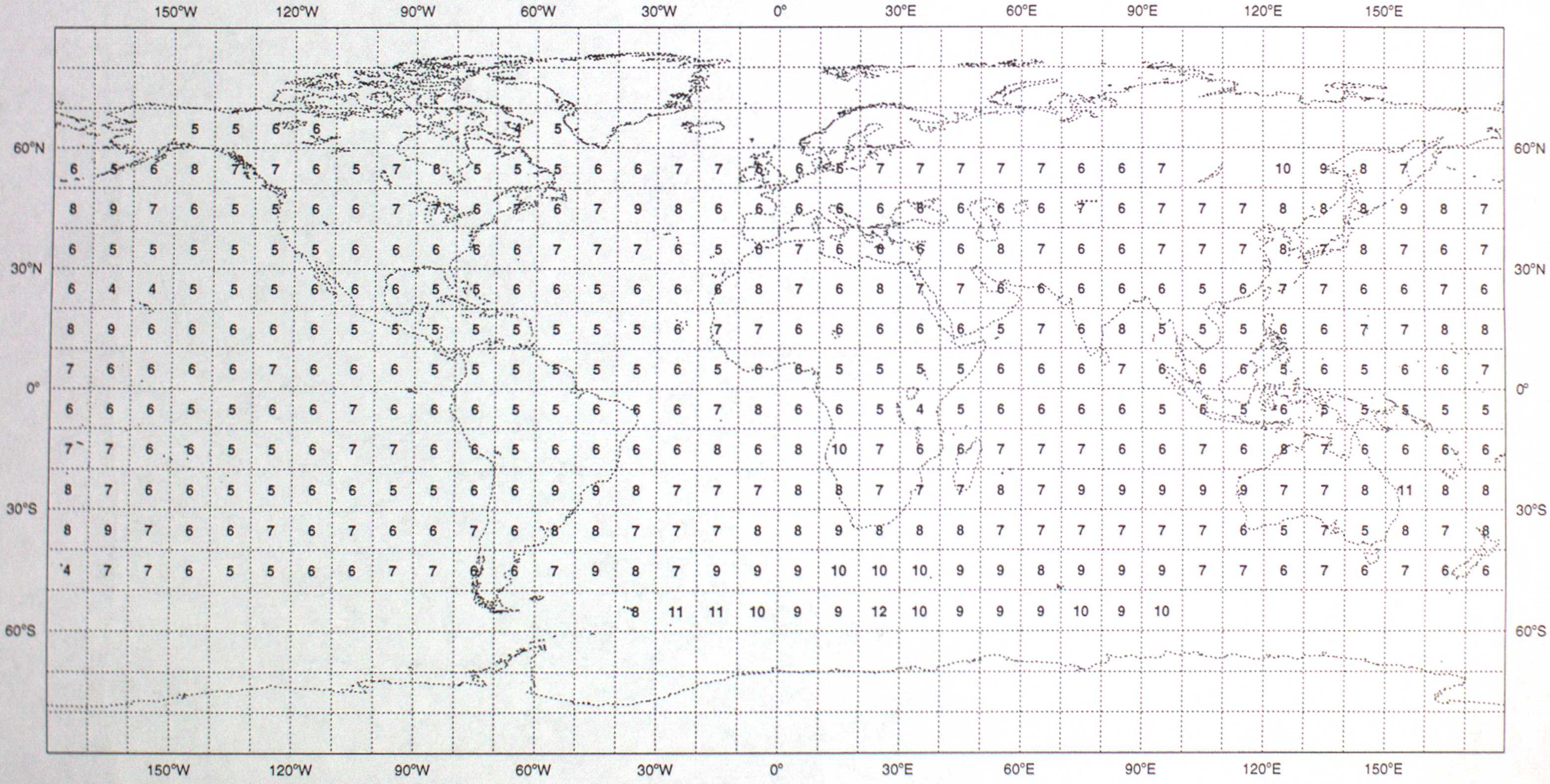

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-1.9 -2.4 -2.8 -1.3 .9 -1.1
-.7 .8 -.5 .6 -.4 -1.4 -1.3 -.5 .0 1.7 .4 -.7 .2 .2 -.2 -1.2 -1.1 .5 -1.1 -1.4 -2.5 -2.5 -2.3 -2.2 -2.3 -1.3 -.8 -2.3 -1.9 -2.8 -3.1 -.9
1.3 1.2 .2 .8 .7 .1 -.9 -1.0 .0 1.1 .2 .8 .3 -.6 .1 .3 .4 .3 -1.4 -2.0 -1.5 -1.9 -1.9 .6 -.8 -2.0 -1.6 -2.2 -2.4 -.4 -.8 -1.4 -1.2 -2.3 -1.8 .0
1.3 .5 .4 .7 .8 .2 -.3 -.3 .3 .4 .5 .3 .1 -.3 .2 .3 -.1 .8 -1.3 -1.4 -1.5 -2.3 -1.7 -2.9 -2.2 -2.5 -1.5 -1.6 -1.2 -.2 1.7 .8 .7 .2 .3 .5
1.0 .2 .2 -.1 .3 -1.0 -.3 -1.2 .1 -.4 -.1 -.4 -.1 -.2 .6 -.1 .4 -.5 -1.4 -1.3 -1.6 -2.1 -1.8 -1.1 -.7 -1.1 -1.1 -.3 -.2 .2 .5 1.3 .7 1.5 -.3 .3
.9 1.8 -.6 -.9 -.9 -1.0 -.9 -.7 -.2 -.2 -.3 -.2 1.0 1.1 1.1 .9 2.2 1.6 1.3 1.2 1.6 .3 1.0 .9 1.5 .5 2.1 .8 .5 .8 .8 .8 2.2 2.4 3.0 1.8
1.8 1.8 1.1 .2 .2 .6 .9 .8 .7 .8 1.0 1.3 .6 1.2 1.3 1.3 1.1 -1.1 1.2 .5 .5 .2 .6 .9 1.0 1.0 2.3 .4 .3 -.1 -.3 .9 1.7 1.8 1.8 2.6
1.0 1.2 .5 .3 -.1 1.2 1.4 1.8 .6 .8 .6 .8 1.2 1.6 2.3 2.3 2.6 3.3 2.3 1.3 .9 .8 .4 .7 .8 1.5 1.2 .7 .6 .9 .8 1.4 1.5 1.6 1.0 1.3
.7 .6 -.9 -1.0 -.7 -.9 .3 1.6 .2 .4 -1.0 -.5 .3 .3 .2 -.1 .2 1.9 2.6 -.5 1.1 -.6 -.2 -.2 -.2 .1 1.1 .9 -.6 -.6 -.1 3.1 2.2 1.6 1.0 .0
.4 1.1 .7 .0 -.2 -.2 -.9 -.6 -.4 -1.0 -1.0 -.2 -.7 -1.3 -1.2 -.9 -.5 -1.8 -1.2 -1.9 -1.1 -1.3 -1.3 -2.3 -1.1 -3.3 -4.5 -3.4 -3.0 -2.0 -1.0 -1.0 -1.5 -4.9 -2.2 -.5
.3 2.1 1.2 .7 1.0 .7 .1 .2 .7 .5 1.2 -.1 -1.7 -1.4 .1 -.1 -.3 -.5 -1.6 -2.6 -2.5 -2.2 -1.7 -1.4 -.7 -.7 -1.6 -1.3 -1.7 -1.5 -.6 -.6 -.6 -2.0 -2.0 -1.1
.2 -.8 -.1 -.1 .3 -.6 -.2 -.8 -.1 -.4 -.2 -.9 .7 -.4 .2 -.7 -2.5 -1.5 -2.6 -4.5 -3.7 -2.9 -2.6 -2.3 -1.8 -2.7 -2.3 -2.6 -1.8 -1.4 -1.2 -.7 -.5 -1.9 -1.8 -1.3
-2.7 -4.0 -4.2 -3.0 -3.1 -3.7 -4.9 -3.5 -3.5 -2.0 -1.8 -3.5 -4.4 -2.9

Figure 24. SATOB 101 - 400 hPa RMS O-B vector differences (ms-1). MAY 2001

All observations

Values are plotted where greater than 10 obs are present


150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
5 5 6 6 4 5
6 5 6 8 7 7 6 5 7 6 5 5 5 6 6 7 7 6 6 5 7 7 7 7 7 6 6 7 10 9 8 7
8 9 7 6 5 5 6 6 7 7 6 7 6 7 9 8 6 6 6 6 6 8 6 6 6 7 6 7 7 7 8 8 8 9 8 7
6 5 5 5 5 5 5 6 6 6 6 6 7 7 7 6 5 6 7 6 6 6 6 8 7 6 6 7 7 7 8 7 8 7 6 7
6 4 4 5 5 5 6 6 6 5 5 6 6 5 6 6 6 8 7 6 8 7 7 6 6 6 6 6 5 6 7 7 6 6 7 6
8 9 6 6 6 6 6 5 5 5 5 5 5 5 5 6 7 7 6 6 6 6 6 5 7 6 8 5 5 5 6 6 7 7 8 8
7 6 6 6 6 7 6 6 6 5 5 5 5 5 5 6 5 6 6 5 5 5 5 6 6 6 7 6 6 6 5 6 5 6 6 7
6 6 6 5 5 6 6 7 6 6 6 5 5 6 6 6 7 8 6 6 5 4 5 6 6 6 6 5 6 5 6 5 5 5 5 5
7 7 6 6 5 5 6 7 7 6 6 5 6 6 6 6 8 6 8 10 7 6 6 7 7 7 6 6 7 6 8 7 6 6 6 6
8 7 6 6 5 5 6 6 5 5 6 6 9 9 8 7 7 7 8 8 7 7 7 8 7 9 9 9 9 9 7 7 8 11 8 8
8 9 7 6 6 7 6 7 6 6 7 6 8 8 7 7 7 8 8 9 8 8 8 7 7 7 7 7 7 6 5 7 5 8 7 8
4 7 7 6 5 5 6 6 7 7 6 6 7 9 8 7 9 9 9 10 10 10 9 9 8 9 9 9 7 7 6 7 6 7 6 6
8 11 11 10 9 9 12 10 9 9 9 10 9 10

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: May 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15 and NOAA-16.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

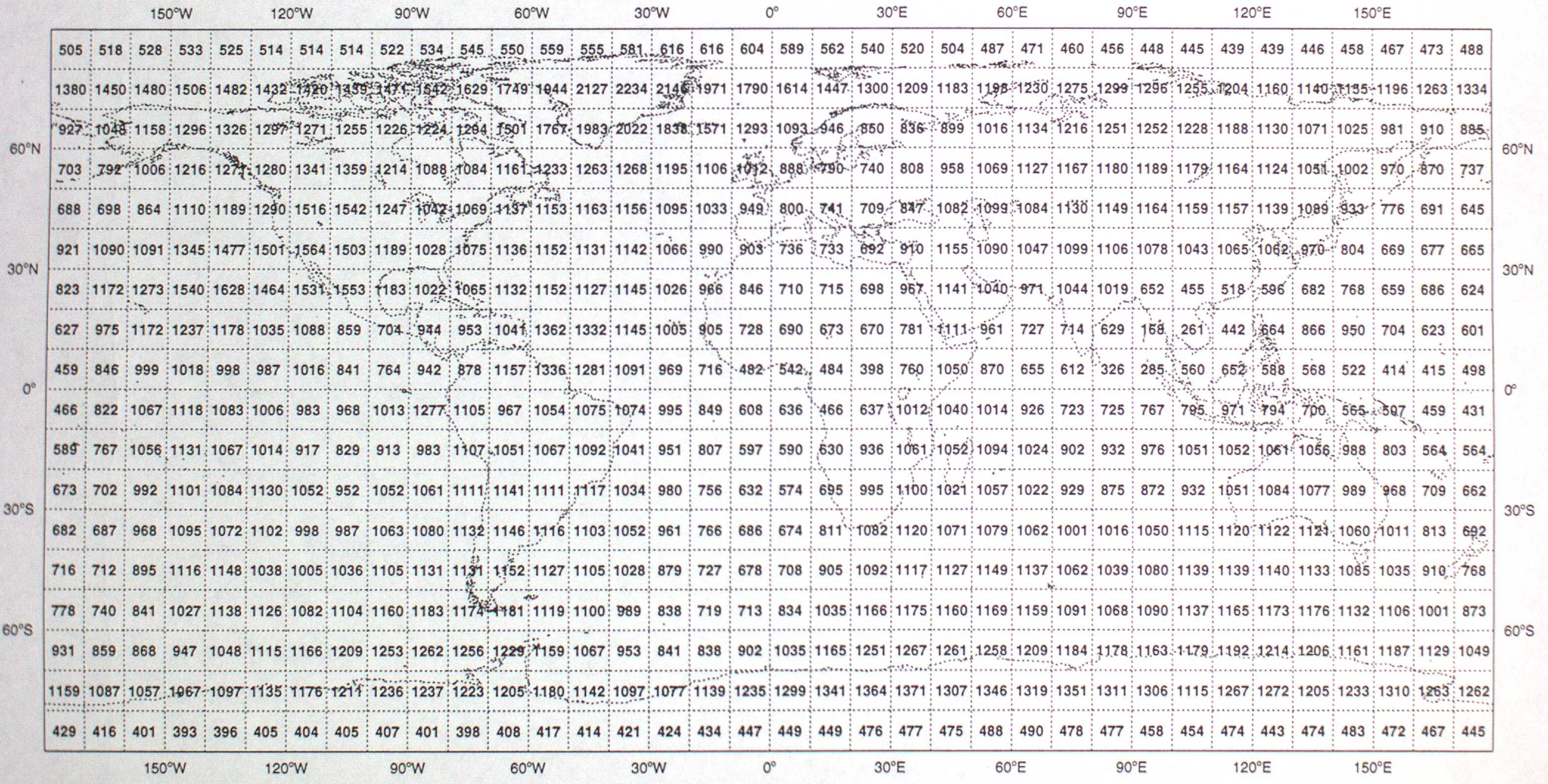
HIRS8 (Surface)
HIRS15 (700)
HIRS11 (500-700)
HIRS4 (400)
AMSUA5 (700)
AMSUA7 (300)
AMSUA9 (100)

:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. MAY 2001

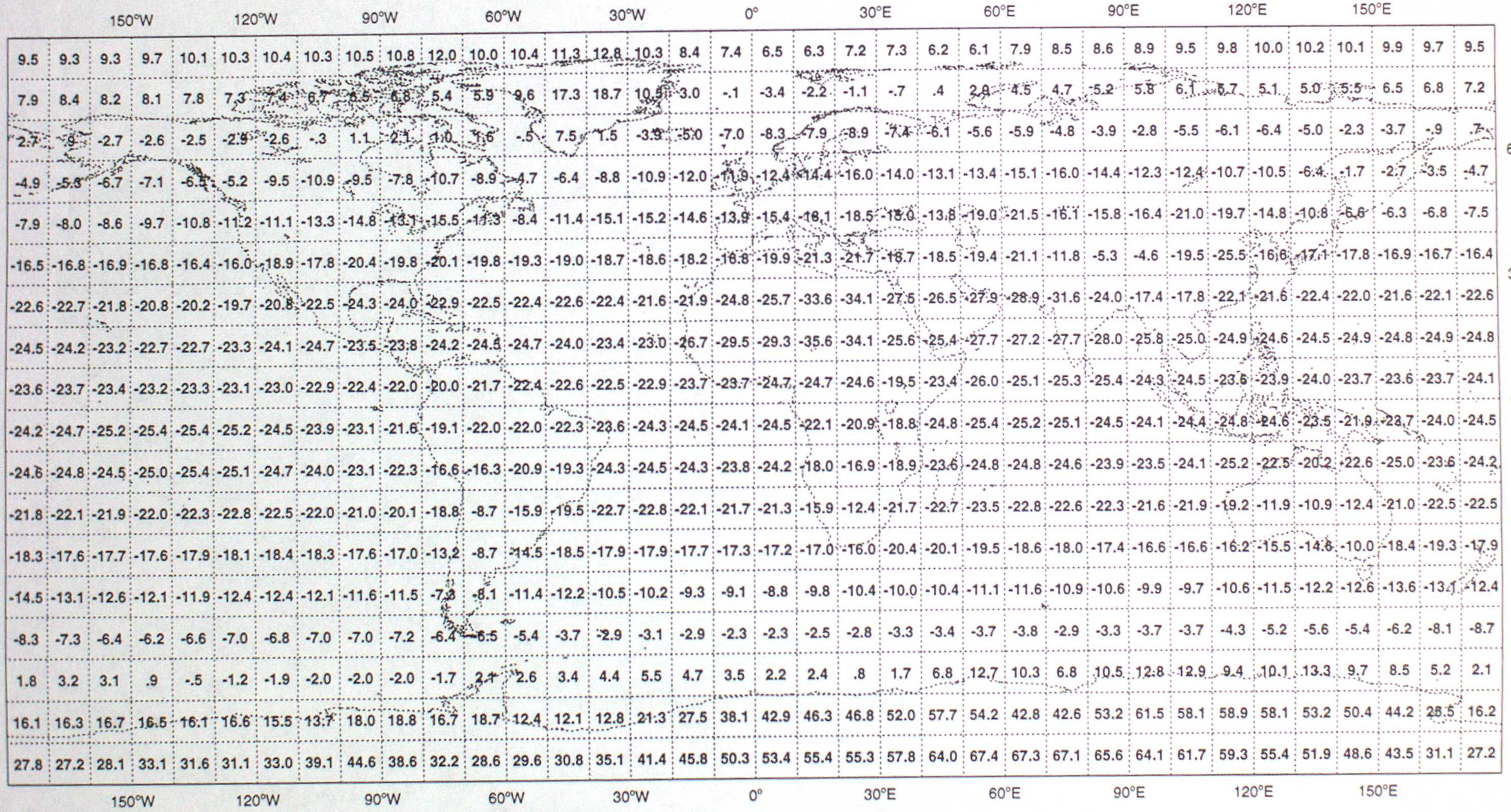
NOAA15, using all observations

Global average number of observations in 24 hours = 630905



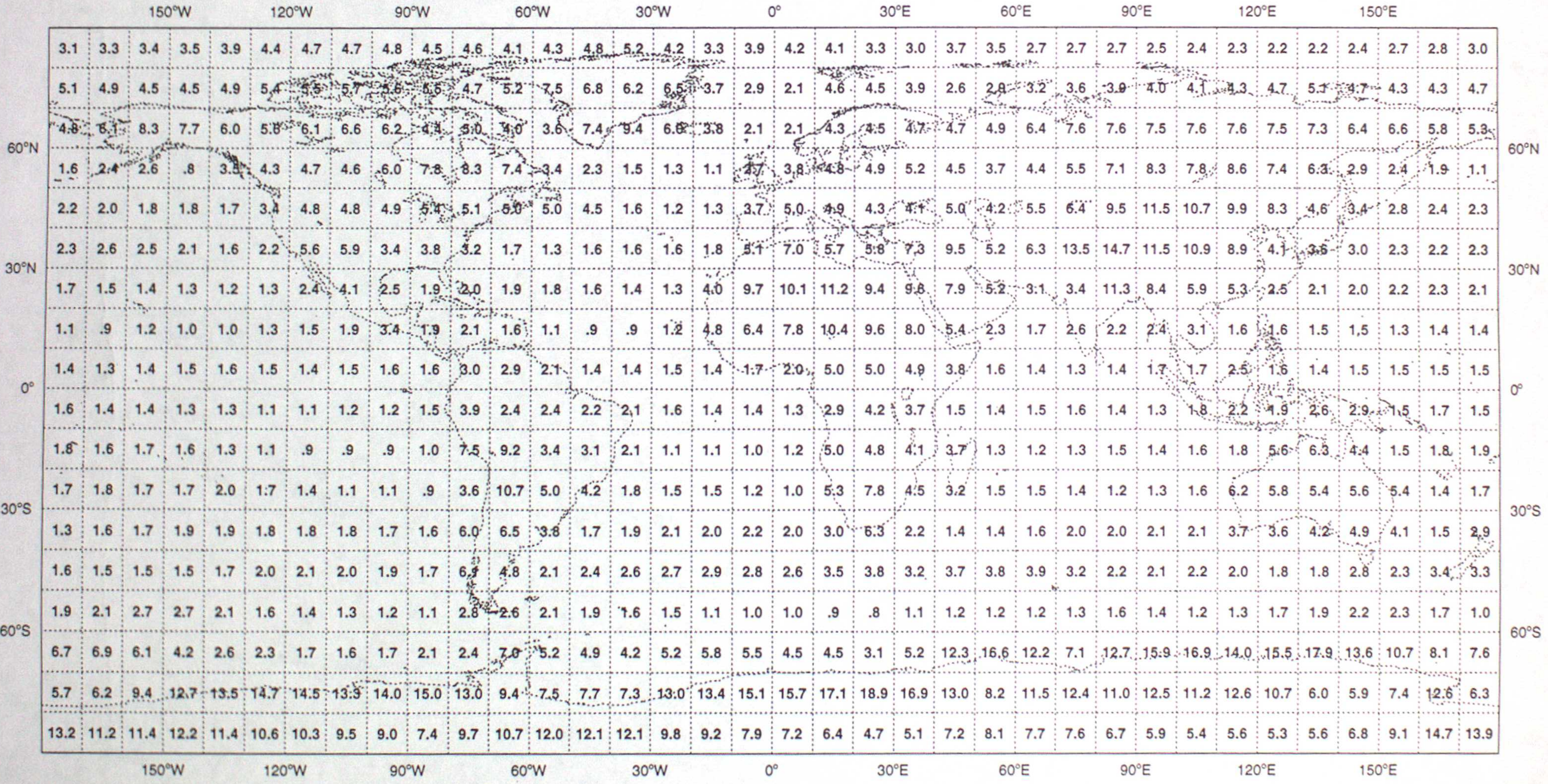
505	518	528	533	525	514	514	514	522	534	545	550	559	555	581	616	616	604	589	562	540	520	504	487	471	460	456	448	445	439	439	446	458	467	473	488
1380	1450	1480	1506	1482	1432	1420	1359	1471	1542	1629	1749	1944	2127	2234	2146	1971	1790	1614	1447	1300	1209	1183	1198	1230	1275	1299	1296	1255	1204	1160	1140	1135	1196	1263	1334
927	1048	1158	1296	1326	1297	1271	1255	1226	1224	1294	1501	1767	1983	2022	1838	1571	1293	1093	946	850	836	899	1016	1134	1216	1251	1252	1228	1188	1130	1071	1025	981	910	885
703	792	1006	1216	1271	1280	1341	1359	1214	1088	1084	1161	1233	1263	1268	1195	1106	1012	888	790	740	808	958	1069	1127	1167	1180	1189	1179	1164	1124	1051	1002	970	870	737
688	698	864	1110	1189	1290	1516	1542	1247	1042	1069	1137	1153	1163	1156	1095	1033	949	800	741	709	847	1082	1099	1084	1130	1149	1164	1159	1157	1139	1089	933	776	691	645
921	1090	1091	1345	1477	1501	1564	1503	1189	1028	1075	1136	1152	1131	1142	1066	990	903	736	733	692	910	1155	1090	1047	1099	1106	1078	1043	1065	1062	970	804	669	677	665
823	1172	1273	1540	1628	1464	1531	1553	1183	1022	1065	1132	1152	1127	1145	1026	966	846	710	715	698	967	1141	1040	971	1044	1019	652	455	518	596	682	768	659	686	624
627	975	1172	1237	1178	1035	1088	859	704	944	953	1041	1362	1332	1145	1005	905	728	690	673	670	781	1111	961	727	714	629	168	261	442	664	866	950	704	623	601
459	846	999	1018	998	987	1016	841	764	942	878	1157	1336	1281	1091	969	716	482	542	484	398	760	1050	870	655	612	326	285	560	652	588	568	522	414	415	498
466	822	1067	1118	1083	1006	983	968	1013	1277	1105	967	1054	1075	1074	995	849	608	636	466	637	1012	1040	1014	926	723	725	767	795	971	794	700	565	507	459	431
589	767	1056	1131	1067	1014	917	829	913	983	1107	1051	1067	1092	1041	951	807	597	590	630	936	1061	1052	1094	1024	902	932	976	1051	1052	1061	1056	988	803	564	564
673	702	992	1101	1084	1130	1052	952	1052	1061	1111	1141	1111	1117	1034	980	756	632	574	695	995	1100	1021	1057	1022	929	875	872	932	1051	1084	1077	989	968	709	662
682	687	968	1095	1072	1102	998	987	1063	1080	1132	1146	1116	1103	1052	961	766	686	674	811	1082	1120	1071	1079	1062	1001	1016	1050	1115	1120	1122	1121	1060	1011	813	692
716	712	895	1116	1148	1038	1005	1036	1105	1131	1131	1152	1127	1105	1028	879	727	678	708	905	1092	1117	1127	1149	1137	1062	1039	1080	1139	1139	1140	1133	1085	1035	910	768
778	740	841	1027	1138	1126	1082	1104	1160	1183	1174	1181	1119	1100	989	838	719	713	834	1035	1166	1175	1160	1169	1159	1091	1068	1090	1137	1165	1173	1176	1132	1106	1001	873
931	859	868	947	1048	1115	1166	1209	1253	1262	1256	1229	1159	1067	953	841	838	902	1035	1165	1251	1267	1261	1258	1209	1184	1178	1163	1179	1192	1214	1206	1161	1187	1129	1049
1159	1087	1057	1067	1097	1135	1176	1211	1236	1237	1223	1205	1180	1142	1097	1077	1139	1235	1299	1341	1364	1371	1307	1346	1319	1351	1311	1306	1115	1267	1272	1205	1233	1310	1263	1262
429	416	401	393	396	405	404	405	407	401	398	408	417	414	421	424	434	447	449	449	476	477	475	488	490	478	477	458	454	474	443	474	483	472	467	445

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: HIRS8 (Surface)
NOAA15, using all observations



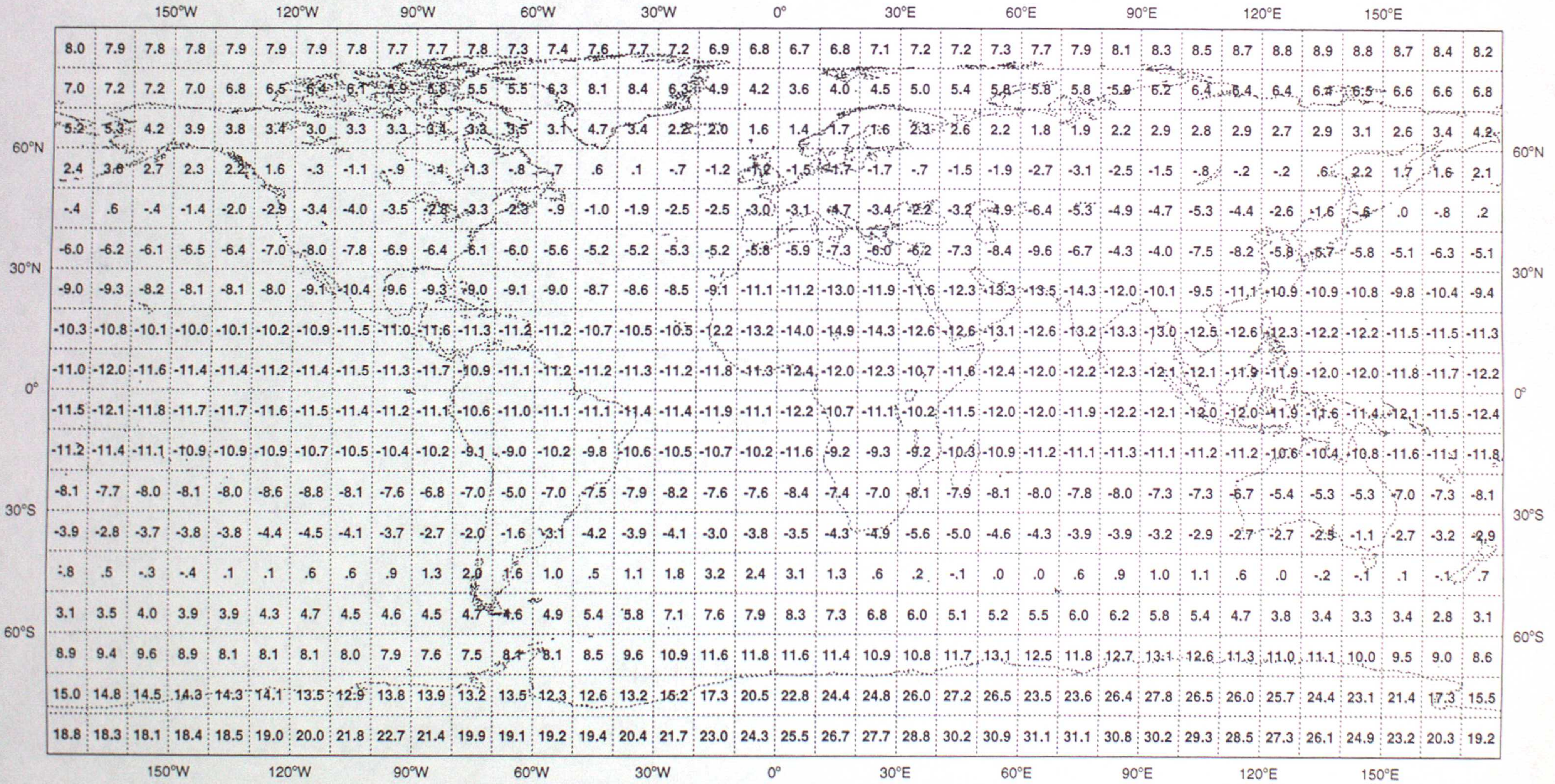
9.5	9.3	9.3	9.7	10.1	10.3	10.4	10.3	10.5	10.8	12.0	10.0	10.4	11.3	12.8	10.3	8.4	7.4	6.5	6.3	7.2	7.3	6.2	6.1	7.9	8.5	8.6	8.9	9.5	9.8	10.0	10.2	10.1	9.9	9.7	9.5
7.9	8.4	8.2	8.1	7.8	7.3	7.4	6.7	6.5	6.8	5.4	5.9	9.6	17.3	18.7	10.5	3.0	-.1	-3.4	-2.2	-1.1	-.7	.4	2.8	4.5	4.7	5.2	5.8	6.1	6.7	5.1	5.0	5.5	6.5	6.8	7.2
2.7	-.9	-2.7	-2.6	-2.5	-2.9	-2.6	-.3	1.1	2.1	1.0	1.6	-.5	7.5	1.5	-3.9	-5.0	-7.0	-8.3	-7.9	-8.9	-7.4	-6.1	-5.6	-5.9	-4.8	-3.9	-2.8	-5.5	-6.1	-6.4	-5.0	-2.3	-3.7	-.9	.7
-4.9	-5.8	-6.7	-7.1	-6.5	-5.2	-9.5	-10.9	-9.5	-7.8	-10.7	-8.9	-4.7	-6.4	-8.8	-10.9	-12.0	-11.9	-12.4	-14.4	-16.0	-14.0	-13.1	-13.4	-15.1	-16.0	-14.4	-12.3	-12.4	-10.7	-10.5	-6.4	-1.7	-2.7	-3.5	-4.7
-7.9	-8.0	-8.6	-9.7	-10.8	-11.2	-11.1	-13.3	-14.8	-13.1	-15.5	-11.3	-8.4	-11.4	-15.1	-15.2	-14.6	-13.9	-15.4	-18.1	-18.5	-18.0	-13.8	-19.0	-21.5	-16.1	-15.8	-16.4	-21.0	-19.7	-14.8	-10.8	-6.6	-6.3	-6.8	-7.5
-16.5	-16.8	-16.9	-16.8	-16.4	-16.0	-18.9	-17.8	-20.4	-19.8	-20.1	-19.8	-19.3	-19.0	-18.7	-18.6	-18.2	-16.8	-19.9	-21.3	-21.7	-18.7	-18.5	-19.4	-21.1	-11.8	-5.3	-4.6	-19.5	-25.5	-16.6	-17.1	-17.8	-16.9	-16.7	-16.4
-22.6	-22.7	-21.8	-20.8	-20.2	-19.7	-20.8	-22.5	-24.3	-24.0	-22.9	-22.5	-22.4	-22.6	-22.4	-21.6	-21.9	-24.8	-25.7	-33.6	-34.1	-27.5	-26.5	-27.9	-28.9	-31.6	-24.0	-17.4	-17.8	-22.1	-21.6	-22.4	-22.0	-21.6	-22.1	-22.6
-24.5	-24.2	-23.2	-22.7	-22.7	-23.3	-24.1	-24.7	-23.5	-23.8	-24.2	-24.5	-24.7	-24.0	-23.4	-23.0	-26.7	-29.5	-29.3	-35.6	-34.1	-25.6	-25.4	-27.7	-27.2	-27.7	-28.0	-25.8	-25.0	-24.9	-24.6	-24.5	-24.9	-24.8	-24.9	-24.8
-23.6	-23.7	-23.4	-23.2	-23.3	-23.1	-23.0	-22.9	-22.4	-22.0	-20.0	-21.7	-22.4	-22.6	-22.5	-22.9	-23.7	-23.7	-24.7	-24.7	-24.6	-19.5	-23.4	-26.0	-25.1	-25.3	-25.4	-24.3	-24.5	-23.6	-23.9	-24.0	-23.7	-23.6	-23.7	-24.1
-24.2	-24.7	-25.2	-25.4	-25.4	-25.2	-24.5	-23.9	-23.1	-21.6	-19.1	-22.0	-22.0	-22.3	-23.6	-24.3	-24.5	-24.1	-24.5	-22.1	-20.9	-18.8	-24.8	-25.4	-25.2	-25.1	-24.5	-24.1	-24.4	-24.8	-24.6	-23.5	-21.9	-23.7	-24.0	-24.5
-24.6	-24.8	-24.5	-25.0	-25.4	-25.1	-24.7	-24.0	-23.1	-22.3	-16.6	-16.3	-20.9	-19.3	-24.3	-24.5	-24.3	-23.8	-24.2	-18.0	-16.9	-18.9	-23.6	-24.8	-24.8	-24.6	-23.9	-23.5	-24.1	-25.2	-22.5	-20.2	-22.6	-25.0	-23.6	-24.2
-21.8	-22.1	-21.9	-22.0	-22.3	-22.8	-22.5	-22.0	-21.0	-20.1	-18.8	-8.7	-15.9	-19.5	-22.7	-22.8	-22.1	-21.7	-21.3	-15.9	-12.4	-21.7	-22.7	-23.5	-22.8	-22.6	-22.3	-21.6	-21.9	-19.2	-11.9	-10.9	-12.4	-21.0	-22.5	-22.5
-18.3	-17.6	-17.7	-17.6	-17.9	-18.1	-18.4	-18.3	-17.6	-17.0	-13.2	-8.7	-14.5	-18.5	-17.9	-17.9	-17.7	-17.3	-17.2	-17.0	-16.0	-20.4	-20.1	-19.5	-18.6	-18.0	-17.4	-16.6	-16.6	-16.2	-15.5	-14.6	-10.0	-18.4	-19.3	-17.9
-14.5	-13.1	-12.6	-12.1	-11.9	-12.4	-12.4	-12.1	-11.6	-11.5	-7.3	-8.1	-11.4	-12.2	-10.5	-10.2	-9.3	-9.1	-8.8	-9.8	-10.4	-10.0	-10.4	-11.1	-11.6	-10.9	-10.6	-9.9	-9.7	-10.6	-11.5	-12.2	-12.6	-13.6	-13.1	-12.4
-8.3	-7.3	-6.4	-6.2	-6.6	-7.0	-6.8	-7.0	-7.0	-7.2	-6.4	-6.5	-5.4	-3.7	-2.9	-3.1	-2.9	-2.3	-2.3	-2.5	-2.8	-3.3	-3.4	-3.7	-3.8	-2.9	-3.3	-3.7	-3.7	-4.3	-5.2	-5.6	-5.4	-6.2	-8.1	-8.7
1.8	3.2	3.1	.9	-.5	-1.2	-1.9	-2.0	-2.0	-2.0	-1.7	2.1	2.6	3.4	4.4	5.5	4.7	3.5	2.2	2.4	.8	1.7	6.8	12.7	10.3	6.8	10.5	12.8	12.9	9.4	10.1	13.3	9.7	8.5	5.2	2.1
16.1	16.3	16.7	16.5	16.1	16.6	15.5	13.7	18.0	18.8	16.7	18.7	12.4	12.1	12.8	21.3	27.5	38.1	42.9	46.3	46.8	52.0	57.7	54.2	42.8	42.6	53.2	61.5	58.1	58.9	58.1	53.2	50.4	44.2	28.5	16.2
27.8	27.2	28.1	33.1	31.6	31.1	33.0	39.1	44.6	38.6	32.2	28.6	29.6	30.8	35.1	41.4	45.8	50.3	53.4	55.4	55.3	57.8	64.0	67.4	67.3	67.1	65.6	64.1	61.7	59.3	55.4	51.9	48.6	43.5	31.1	27.2

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001
Channel: HIRS8 (Surface)
NOAA15, using all observations



3.1	3.3	3.4	3.5	3.9	4.4	4.7	4.7	4.8	4.5	4.6	4.1	4.3	4.8	5.2	4.2	3.3	3.9	4.2	4.1	3.3	3.0	3.7	3.5	2.7	2.7	2.7	2.5	2.4	2.3	2.2	2.2	2.4	2.7	2.8	3.0
5.1	4.9	4.5	4.5	4.9	5.4	5.5	5.7	5.6	5.5	4.7	5.2	7.5	6.8	6.2	6.5	3.7	2.9	2.1	4.6	4.5	3.9	2.6	2.8	3.2	3.6	3.9	4.0	4.1	4.3	4.7	5.1	4.7	4.3	4.3	4.7
4.8	6.1	8.3	7.7	6.0	5.8	6.1	6.6	6.2	4.4	5.0	4.0	3.6	7.4	9.4	6.8	3.8	2.1	2.1	4.3	4.5	4.7	4.7	4.9	6.4	7.6	7.6	7.5	7.6	7.6	7.5	7.3	6.4	6.6	5.8	5.3
1.6	2.4	2.6	.8	3.5	4.3	4.7	4.6	6.0	7.8	8.3	7.4	3.4	2.3	1.5	1.3	1.1	2.7	3.8	4.8	4.9	5.2	4.5	3.7	4.4	5.5	7.1	8.3	7.8	8.6	7.4	6.3	2.9	2.4	1.9	1.1
2.2	2.0	1.8	1.8	1.7	3.4	4.8	4.8	4.9	5.4	5.1	5.0	5.0	4.5	1.6	1.2	1.3	3.7	5.0	4.9	4.3	4.1	5.0	4.2	5.5	6.4	9.5	11.5	10.7	9.9	8.3	4.6	3.4	2.8	2.4	2.3
2.3	2.6	2.5	2.1	1.6	2.2	5.6	5.9	3.4	3.8	3.2	1.7	1.3	1.6	1.6	1.6	1.8	5.1	7.0	5.7	5.8	7.3	9.5	5.2	6.3	13.5	14.7	11.5	10.9	8.9	4.1	3.6	3.0	2.3	2.2	2.3
1.7	1.5	1.4	1.3	1.2	1.3	2.4	4.1	2.5	1.9	2.0	1.9	1.8	1.6	1.4	1.3	4.0	9.7	10.1	11.2	9.4	9.8	7.9	5.2	3.1	3.4	11.3	8.4	5.9	5.3	2.5	2.1	2.0	2.2	2.3	2.1
1.1	.9	1.2	1.0	1.0	1.3	1.5	1.9	3.4	1.9	2.1	1.6	1.1	.9	.9	1.2	4.8	6.4	7.8	10.4	9.6	8.0	5.4	2.3	1.7	2.6	2.2	2.4	3.1	1.6	1.6	1.5	1.5	1.3	1.4	1.4
1.4	1.3	1.4	1.5	1.6	1.5	1.4	1.5	1.6	1.6	3.0	2.9	2.1	1.4	1.4	1.5	1.4	1.7	2.0	5.0	5.0	4.9	3.8	1.6	1.4	1.3	1.4	1.7	1.7	2.5	1.6	1.4	1.5	1.5	1.5	1.5
1.6	1.4	1.4	1.3	1.3	1.1	1.1	1.2	1.2	1.5	3.9	2.4	2.4	2.2	2.1	1.6	1.4	1.4	1.3	2.9	4.2	3.7	1.5	1.4	1.5	1.6	1.4	1.3	1.8	2.2	1.9	2.6	2.9	1.5	1.7	1.5
1.8	1.6	1.7	1.6	1.3	1.1	.9	.9	.9	1.0	7.5	9.2	3.4	3.1	2.1	1.1	1.1	1.0	1.2	5.0	4.8	4.1	3.7	1.3	1.2	1.3	1.5	1.4	1.6	1.8	5.6	6.3	4.4	1.5	1.8	1.9
1.7	1.8	1.7	1.7	2.0	1.7	1.4	1.1	1.1	.9	3.6	10.7	5.0	4.2	1.8	1.5	1.5	1.2	1.0	5.3	7.8	4.5	3.2	1.5	1.5	1.4	1.2	1.3	1.6	6.2	5.8	5.4	5.6	5.4	1.4	1.7
1.3	1.6	1.7	1.9	1.9	1.8	1.8	1.8	1.7	1.6	6.0	6.5	3.8	1.7	1.9	2.1	2.0	2.2	2.0	3.0	6.3	2.2	1.4	1.4	1.6	2.0	2.0	2.1	2.1	3.7	3.6	4.2	4.9	4.1	1.5	2.9
1.6	1.5	1.5	1.5	1.7	2.0	2.1	2.0	1.9	1.7	6.9	4.8	2.1	2.4	2.6	2.7	2.9	2.8	2.6	3.5	3.8	3.2	3.7	3.8	3.9	3.2	2.2	2.1	2.2	2.0	1.8	1.8	2.8	2.3	3.4	3.3
1.9	2.1	2.7	2.7	2.1	1.6	1.4	1.3	1.2	1.1	2.8	2.6	2.1	1.9	1.6	1.5	1.1	1.0	1.0	.9	.8	1.1	1.2	1.2	1.2	1.3	1.6	1.4	1.2	1.3	1.7	1.9	2.2	2.3	1.7	1.0
6.7	6.9	6.1	4.2	2.6	2.3	1.7	1.6	1.7	2.1	2.4	7.0	5.2	4.9	4.2	5.2	5.8	5.5	4.5	4.5	3.1	5.2	12.3	16.6	12.2	7.1	12.7	15.9	16.9	14.0	15.5	17.9	13.6	10.7	8.1	7.6
5.7	6.2	9.4	12.7	13.5	14.7	14.5	13.3	14.0	15.0	13.0	9.4	7.5	7.7	7.3	13.0	13.4	15.1	15.7	17.1	18.9	16.9	13.0	8.2	11.5	12.4	11.0	12.5	11.2	12.6	10.7	6.0	5.9	7.4	12.6	6.3
13.2	11.2	11.4	12.2	11.4	10.6	10.3	9.5	9.0	7.4	9.7	10.7	12.0	12.1	12.1	9.8	9.2	7.9	7.2	6.4	4.7	5.1	7.2	8.1	7.7	7.6	6.7	5.9	5.4	5.6	5.3	5.6	6.8	9.1	14.7	13.9

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: HIRS15 (700 hPa)
NOAA15, using all observations

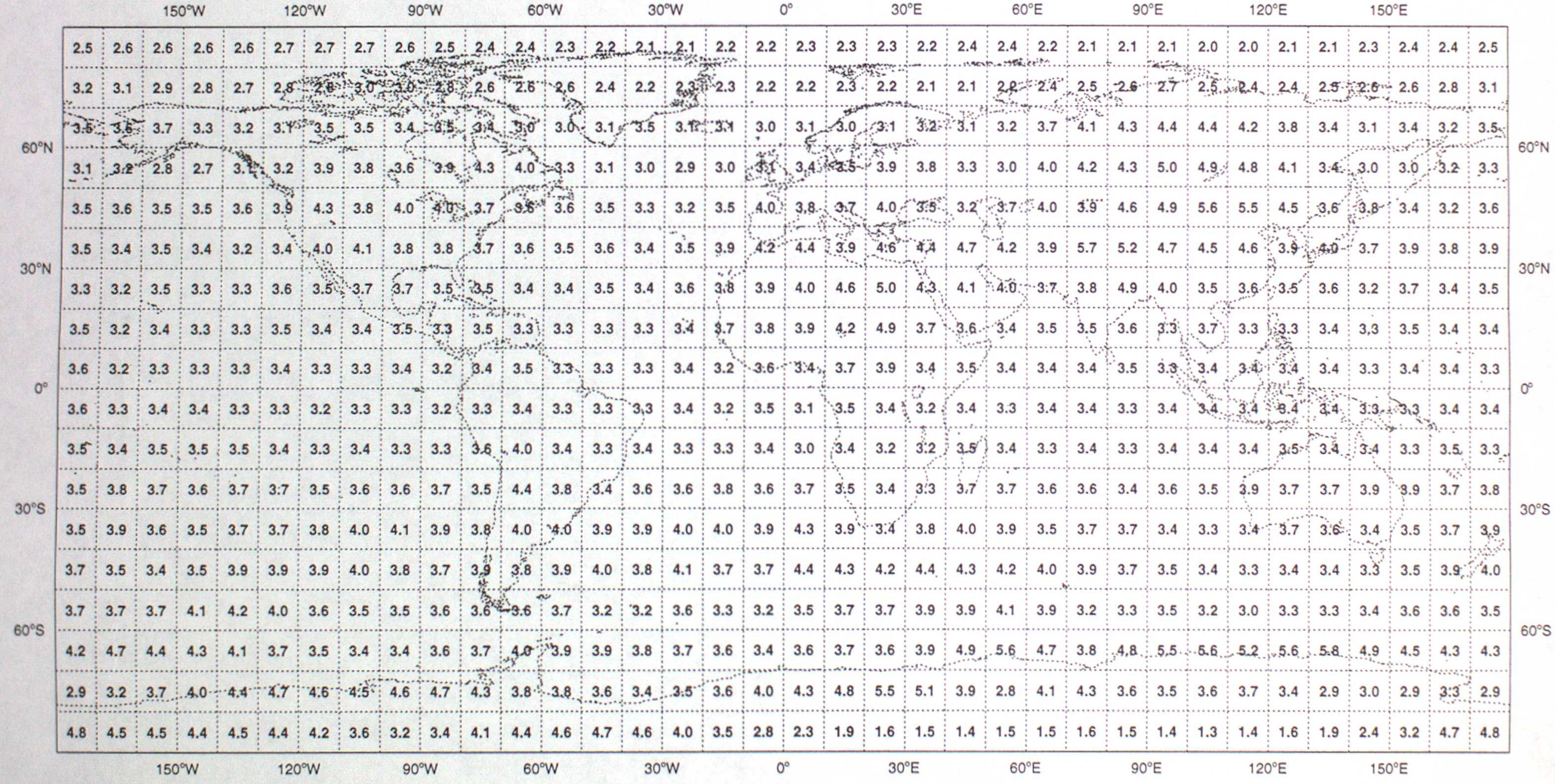


8.0	7.9	7.8	7.8	7.9	7.9	7.9	7.8	7.7	7.7	7.8	7.3	7.4	7.6	7.7	7.2	6.9	6.8	6.7	6.8	7.1	7.2	7.2	7.3	7.7	7.9	8.1	8.3	8.5	8.7	8.8	8.9	8.8	8.7	8.4	8.2
7.0	7.2	7.2	7.0	6.8	6.5	6.4	6.1	5.9	5.8	5.5	5.5	6.3	8.1	8.4	6.3	4.9	4.2	3.6	4.0	4.5	5.0	5.4	5.8	5.8	5.8	5.9	6.2	6.4	6.4	6.4	6.4	6.5	6.6	6.6	6.8
5.2	5.3	4.2	3.9	3.8	3.4	3.0	3.3	3.3	3.4	3.3	3.5	3.1	4.7	3.4	2.2	2.0	1.6	1.4	1.7	1.6	2.3	2.6	2.2	1.8	1.9	2.2	2.9	2.8	2.9	2.7	2.9	3.1	2.6	3.4	4.2
2.4	3.6	2.7	2.3	2.2	1.6	-.3	-1.1	-.9	-.4	-1.3	-.8	-.7	.6	.1	-.7	-1.2	-1.2	-1.5	-1.7	-1.7	-.7	-1.5	-1.9	-2.7	-3.1	-2.5	-1.5	-.8	-.2	-.2	.6	2.2	1.7	1.6	2.1
-.4	.6	-.4	-1.4	-2.0	-2.9	-3.4	-4.0	-3.5	-2.8	-3.3	-2.3	-.9	-1.0	-1.9	-2.5	-2.5	-3.0	-3.1	-4.7	-3.4	-2.2	-3.2	-4.9	-6.4	-5.3	-4.9	-4.7	-5.3	-4.4	-2.6	-1.6	-.6	.0	-.8	.2
-6.0	-6.2	-6.1	-6.5	-6.4	-7.0	-8.0	-7.8	-6.9	-6.4	-6.1	-6.0	-5.6	-5.2	-5.2	-5.3	-5.2	-5.8	-5.9	-7.3	-6.0	-6.2	-7.3	-8.4	-9.6	-6.7	-4.3	-4.0	-7.5	-8.2	-5.8	-5.7	-5.8	-5.1	-6.3	-5.1
-9.0	-9.3	-8.2	-8.1	-8.1	-8.0	-9.1	-10.4	-9.6	-9.3	-9.0	-9.1	-9.0	-8.7	-8.6	-8.5	-9.1	-11.1	-11.2	-13.0	-11.9	-11.6	-12.3	-13.3	-13.5	-14.3	-12.0	-10.1	-9.5	-11.1	-10.9	-10.9	-10.8	-9.8	-10.4	-9.4
-10.3	-10.8	-10.1	-10.0	-10.1	-10.2	-10.9	-11.5	-11.0	-11.6	-11.3	-11.2	-11.2	-10.7	-10.5	-10.5	-12.2	-13.2	-14.0	-14.9	-14.3	-12.6	-12.6	-13.1	-12.6	-13.2	-13.3	-13.0	-12.5	-12.6	-12.3	-12.2	-12.2	-11.5	-11.5	-11.3
-11.0	-12.0	-11.6	-11.4	-11.4	-11.2	-11.4	-11.5	-11.3	-11.7	-10.9	-11.1	-11.2	-11.2	-11.3	-11.2	-11.8	-11.3	-12.4	-12.0	-12.3	-10.7	-11.6	-12.4	-12.0	-12.2	-12.3	-12.1	-12.1	-11.9	-11.9	-12.0	-12.0	-11.8	-11.7	-12.2
-11.5	-12.1	-11.8	-11.7	-11.7	-11.6	-11.5	-11.4	-11.2	-11.1	-10.6	-11.0	-11.1	-11.1	-11.4	-11.4	-11.9	-11.1	-12.2	-10.7	-11.1	-10.2	-11.5	-12.0	-12.0	-11.9	-12.2	-12.1	-12.0	-12.0	-11.9	-11.6	-11.4	-12.1	-11.5	-12.4
-11.2	-11.4	-11.1	-10.9	-10.9	-10.9	-10.7	-10.5	-10.4	-10.2	-9.1	-9.0	-10.2	-9.8	-10.6	-10.5	-10.7	-10.2	-11.6	-9.2	-9.3	-9.2	-10.3	-10.9	-11.2	-11.1	-11.3	-11.1	-11.2	-11.2	-10.6	-10.4	-10.8	-11.6	-11.1	-11.8
-8.1	-7.7	-8.0	-8.1	-8.0	-8.6	-8.8	-8.1	-7.6	-6.8	-7.0	-5.0	-7.0	-7.5	-7.9	-8.2	-7.6	-7.6	-8.4	-7.4	-7.0	-8.1	-7.9	-8.1	-8.0	-7.8	-8.0	-7.3	-7.3	-6.7	-5.4	-5.3	-5.3	-7.0	-7.3	-8.1
-3.9	-2.8	-3.7	-3.8	-3.8	-4.4	-4.5	-4.1	-3.7	-2.7	-2.0	-1.6	-3.1	-4.2	-3.9	-4.1	-3.0	-3.8	-3.5	-4.3	-4.9	-5.6	-5.0	-4.6	-4.3	-3.9	-3.9	-3.2	-2.9	-2.7	-2.7	-2.5	-1.1	-2.7	-3.2	-2.9
-.8	.5	-.3	-.4	.1	.1	.6	.6	.9	1.3	2.0	1.6	1.0	.5	1.1	1.8	3.2	2.4	3.1	1.3	.6	.2	-.1	.0	.0	.6	.9	1.0	1.1	.6	.0	-.2	-.1	.1	-.1	.7
3.1	3.5	4.0	3.9	3.9	4.3	4.7	4.5	4.6	4.5	4.7	4.6	4.9	5.4	5.8	7.1	7.6	7.9	8.3	7.3	6.8	6.0	5.1	5.2	5.5	6.0	6.2	5.8	5.4	4.7	3.8	3.4	3.3	3.4	2.8	3.1
8.9	9.4	9.6	8.9	8.1	8.1	8.1	8.0	7.9	7.6	7.5	8.1	8.1	8.5	9.6	10.9	11.6	11.8	11.6	11.4	10.9	10.8	11.7	13.1	12.5	11.8	12.7	13.1	12.6	11.3	11.0	11.1	10.0	9.5	9.0	8.6
15.0	14.8	14.5	14.3	14.3	14.1	13.5	12.9	13.8	13.9	13.2	13.5	12.3	12.6	13.2	15.2	17.3	20.5	22.8	24.4	24.8	26.0	27.2	26.5	23.5	23.6	26.4	27.8	26.5	26.0	25.7	24.4	23.1	21.4	17.3	15.5
18.8	18.3	18.1	18.4	18.5	19.0	20.0	21.8	22.7	21.4	19.9	19.1	19.2	19.4	20.4	21.7	23.0	24.3	25.5	26.7	27.7	28.8	30.2	30.9	31.1	31.1	30.8	30.2	29.3	28.5	27.3	26.1	24.9	23.2	20.3	19.2

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001

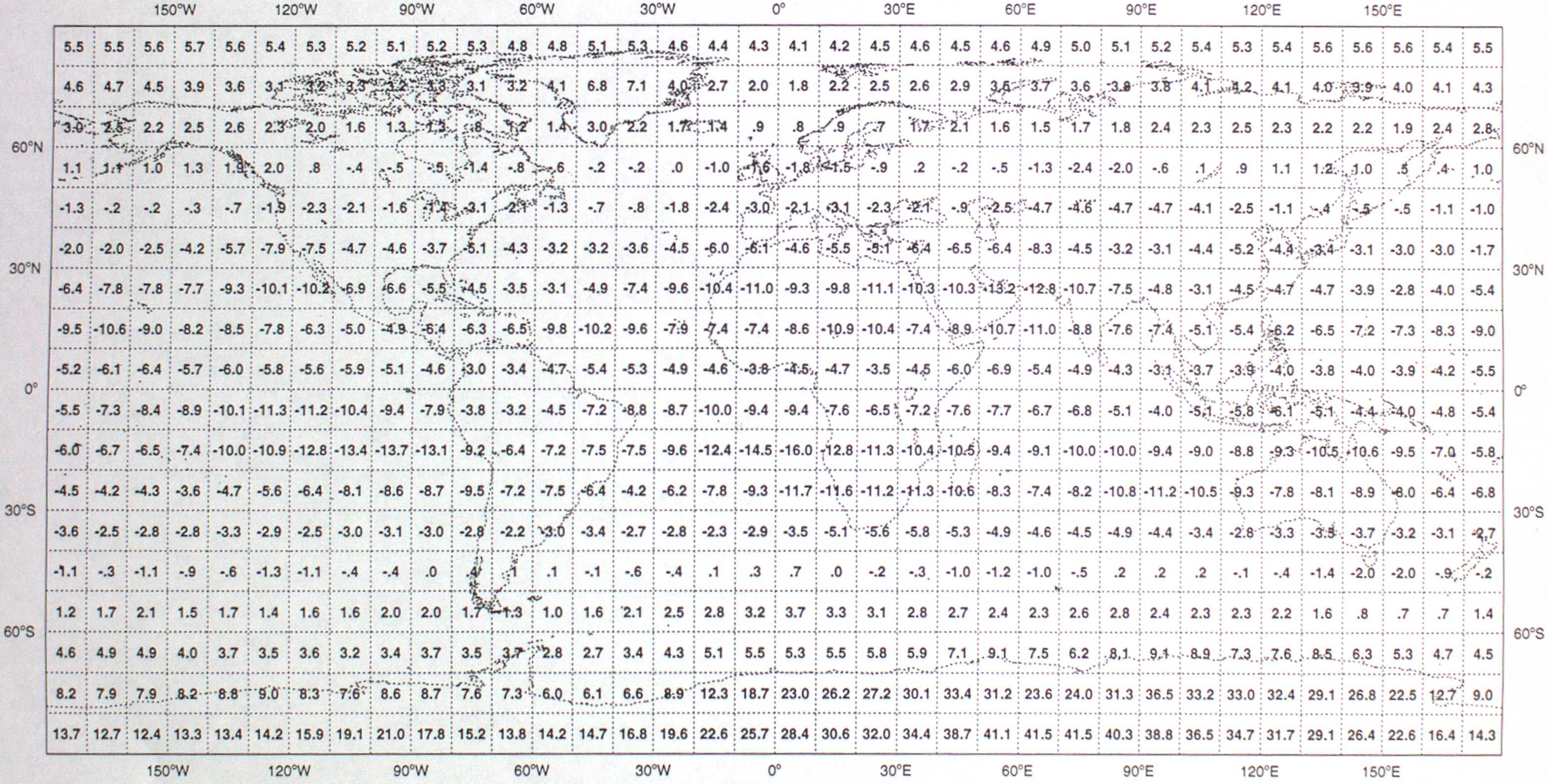
Channel: HIRS15 (700 hPa)

NOAA15, using all observations



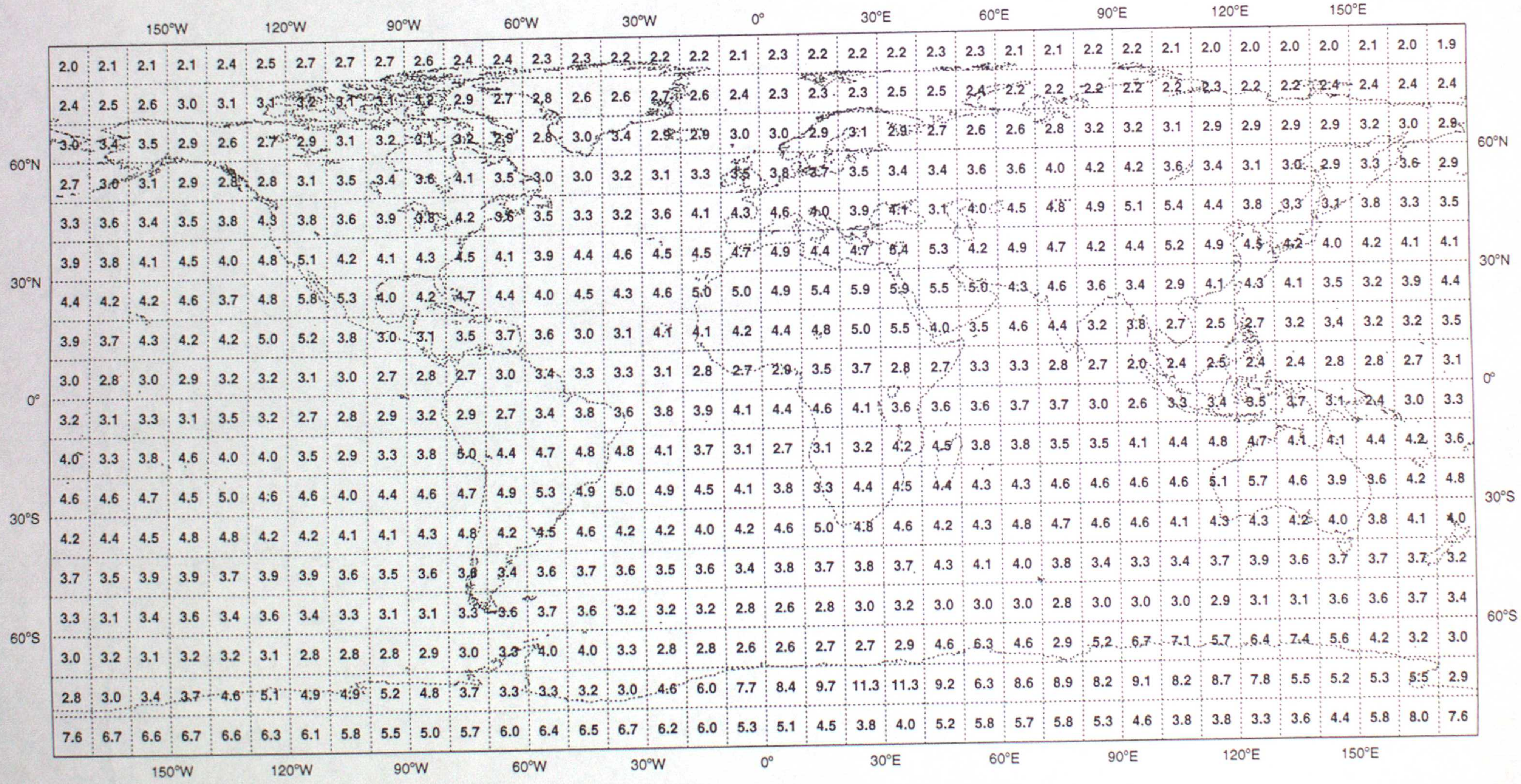
2.5	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.2	2.4	2.4	2.2	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.3	2.4	2.4	2.5
3.2	3.1	2.9	2.8	2.7	2.8	2.8	3.0	3.0	2.8	2.6	2.6	2.6	2.4	2.2	2.3	2.3	2.2	2.2	2.3	2.2	2.1	2.1	2.2	2.4	2.5	2.6	2.7	2.5	2.4	2.4	2.5	2.6	2.6	2.8	3.1
3.5	3.6	3.7	3.3	3.2	3.1	3.5	3.5	3.4	3.5	3.4	3.0	3.0	3.1	3.5	3.1	3.1	3.0	3.1	3.0	3.1	3.2	3.1	3.2	3.7	4.1	4.3	4.4	4.4	4.2	3.8	3.4	3.1	3.4	3.2	3.5
3.1	3.2	2.8	2.7	3.1	3.2	3.9	3.8	3.6	3.9	4.3	4.0	3.3	3.1	3.0	2.9	3.0	3.1	3.4	3.5	3.9	3.8	3.3	3.0	4.0	4.2	4.3	5.0	4.9	4.8	4.1	3.4	3.0	3.0	3.2	3.3
3.5	3.6	3.5	3.5	3.6	3.9	4.3	3.8	4.0	4.0	3.7	3.6	3.6	3.5	3.3	3.2	3.5	4.0	3.8	3.7	4.0	3.5	3.2	3.7	4.0	3.9	4.6	4.9	5.6	5.5	4.5	3.6	3.8	3.4	3.2	3.6
3.5	3.4	3.5	3.4	3.2	3.4	4.0	4.1	3.8	3.8	3.7	3.6	3.5	3.6	3.4	3.5	3.9	4.2	4.4	3.9	4.6	4.4	4.7	4.2	3.9	5.7	5.2	4.7	4.5	4.6	3.9	4.0	3.7	3.9	3.8	3.9
3.3	3.2	3.5	3.3	3.3	3.6	3.5	3.7	3.7	3.5	3.5	3.4	3.4	3.5	3.4	3.6	3.8	3.9	4.0	4.6	5.0	4.3	4.1	4.0	3.7	3.8	4.9	4.0	3.5	3.6	3.5	3.6	3.2	3.7	3.4	3.5
3.5	3.2	3.4	3.3	3.3	3.5	3.4	3.4	3.5	3.3	3.5	3.3	3.3	3.3	3.3	3.4	3.7	3.8	3.9	4.2	4.9	3.7	3.6	3.4	3.5	3.5	3.6	3.3	3.7	3.3	3.3	3.4	3.3	3.5	3.4	3.4
3.6	3.2	3.3	3.3	3.3	3.4	3.3	3.3	3.4	3.2	3.4	3.5	3.3	3.3	3.3	3.4	3.2	3.6	3.4	3.7	3.9	3.4	3.5	3.4	3.4	3.4	3.5	3.3	3.4	3.4	3.4	3.4	3.3	3.4	3.4	3.3
3.6	3.3	3.4	3.4	3.3	3.3	3.2	3.3	3.3	3.2	3.3	3.4	3.3	3.3	3.3	3.4	3.2	3.5	3.1	3.5	3.4	3.2	3.4	3.3	3.4	3.4	3.3	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.4	3.4
3.5	3.4	3.5	3.5	3.5	3.4	3.3	3.4	3.3	3.3	3.6	4.0	3.4	3.3	3.4	3.3	3.3	3.4	3.0	3.4	3.2	3.2	3.5	3.4	3.3	3.4	3.3	3.4	3.4	3.4	3.5	3.4	3.4	3.3	3.5	3.3
3.5	3.8	3.7	3.6	3.7	3.7	3.5	3.6	3.6	3.7	3.5	4.4	3.8	3.4	3.6	3.6	3.8	3.6	3.7	3.5	3.4	3.3	3.7	3.7	3.6	3.6	3.4	3.6	3.5	3.9	3.7	3.7	3.9	3.9	3.7	3.8
3.5	3.9	3.6	3.5	3.7	3.7	3.8	4.0	4.1	3.9	3.8	4.0	4.0	3.9	3.9	4.0	4.0	3.9	4.3	3.9	3.4	3.8	4.0	3.9	3.5	3.7	3.7	3.4	3.3	3.4	3.7	3.6	3.4	3.5	3.7	3.9
3.7	3.5	3.4	3.5	3.9	3.9	3.9	4.0	3.8	3.7	3.9	3.8	3.9	4.0	3.8	4.1	3.7	3.7	4.4	4.3	4.2	4.4	4.3	4.2	4.0	3.9	3.7	3.5	3.4	3.3	3.4	3.4	3.3	3.5	3.9	4.0
3.7	3.7	3.7	4.1	4.2	4.0	3.6	3.5	3.5	3.6	3.6	3.6	3.7	3.2	3.2	3.6	3.3	3.2	3.5	3.7	3.7	3.9	3.9	4.1	3.9	3.2	3.3	3.5	3.2	3.0	3.3	3.3	3.4	3.6	3.6	3.5
4.2	4.7	4.4	4.3	4.1	3.7	3.5	3.4	3.4	3.6	3.7	4.0	3.9	3.9	3.8	3.7	3.6	3.4	3.6	3.7	3.6	3.9	4.9	5.6	4.7	3.8	4.8	5.5	5.6	5.2	5.6	5.8	4.9	4.5	4.3	4.3
2.9	3.2	3.7	4.0	4.4	4.7	4.6	4.5	4.6	4.7	4.3	3.8	3.8	3.6	3.4	3.5	3.6	4.0	4.3	4.8	5.5	5.1	3.9	2.8	4.1	4.3	3.6	3.5	3.6	3.7	3.4	2.9	3.0	2.9	3.3	2.9
4.8	4.5	4.5	4.4	4.5	4.4	4.2	3.6	3.2	3.4	4.1	4.4	4.6	4.7	4.6	4.0	3.5	2.8	2.3	1.9	1.6	1.5	1.4	1.5	1.5	1.6	1.5	1.4	1.3	1.4	1.6	1.9	2.4	3.2	4.7	4.8

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



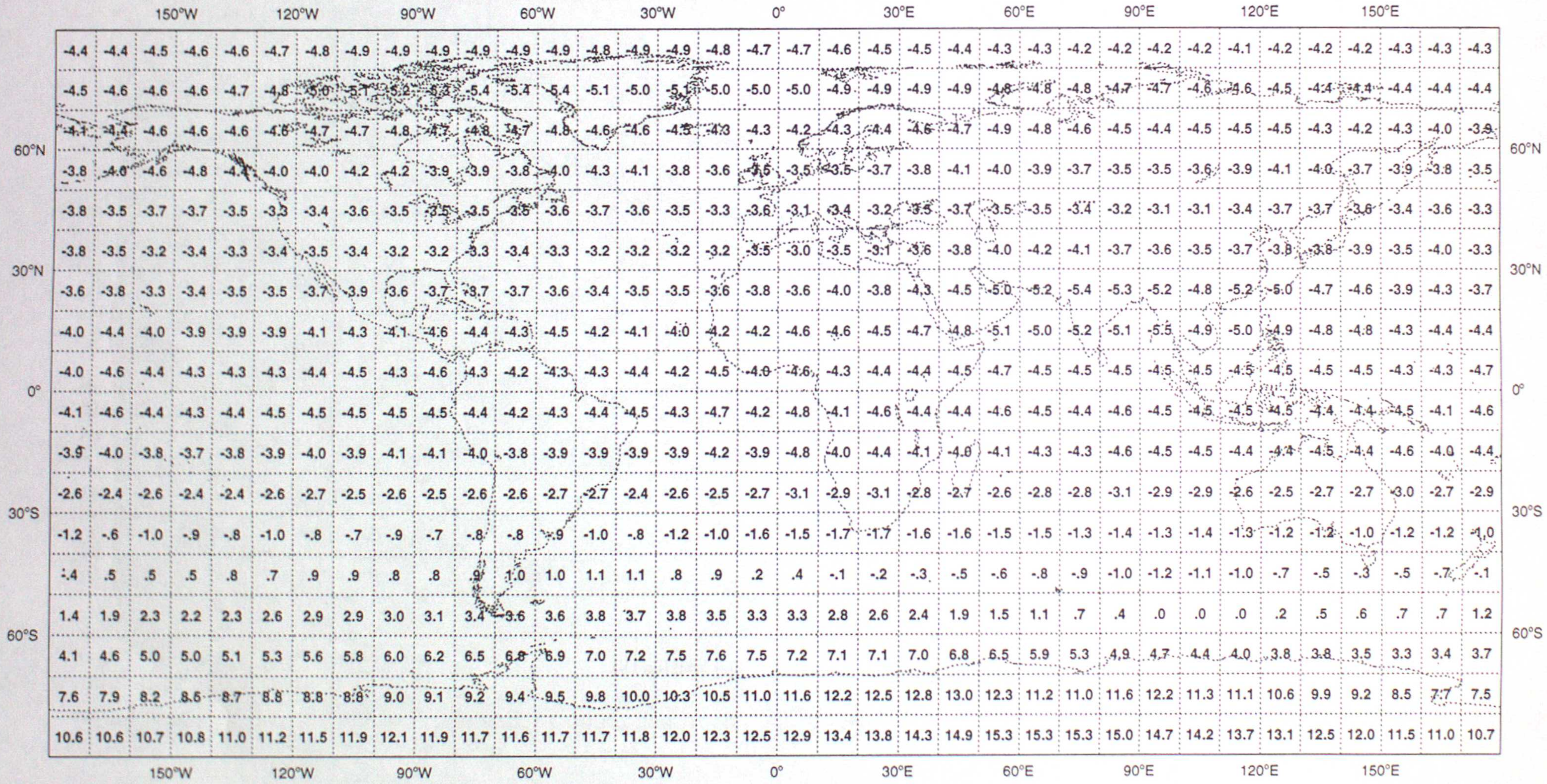
5.5	5.5	5.6	5.7	5.6	5.4	5.3	5.2	5.1	5.2	5.3	4.8	4.8	5.1	5.3	4.6	4.4	4.3	4.1	4.2	4.5	4.6	4.5	4.6	4.9	5.0	5.1	5.2	5.4	5.3	5.4	5.6	5.6	5.6	5.4	5.5
4.6	4.7	4.5	3.9	3.6	3.1	3.2	3.3	3.2	3.3	3.1	3.2	4.1	6.8	7.1	4.0	2.7	2.0	1.8	2.2	2.5	2.6	2.9	3.6	3.7	3.6	3.8	3.8	4.1	4.2	4.1	4.0	3.9	4.0	4.1	4.3
3.0	2.5	2.2	2.5	2.6	2.3	2.0	1.6	1.3	1.3	.8	1.2	1.4	3.0	2.2	1.7	1.4	.9	.8	.9	.7	1.7	2.1	1.6	1.5	1.7	1.8	2.4	2.3	2.5	2.3	2.2	2.2	1.9	2.4	2.8
1.1	1.1	1.0	1.3	1.9	2.0	.8	-.4	-.5	-.5	-1.4	-.8	-.6	-.2	-.2	.0	-1.0	-1.6	-1.8	-1.5	-.9	.2	-.2	-.5	-1.3	-2.4	-2.0	-.6	.1	.9	1.1	1.2	1.0	.5	.4	1.0
-1.3	-.2	-.2	-.3	-.7	-1.9	-2.3	-2.1	-1.6	-1.4	-3.1	-2.1	-1.3	-.7	-.8	-1.8	-2.4	-3.0	-2.1	-3.1	-2.3	-2.1	-.9	-2.5	-4.7	-4.6	-4.7	-4.7	-4.1	-2.5	-1.1	-.4	-.5	-.5	-1.1	-1.0
-2.0	-2.0	-2.5	-4.2	-5.7	-7.9	-7.5	-4.7	-4.6	-3.7	-5.1	-4.3	-3.2	-3.2	-3.6	-4.5	-6.0	-6.1	-4.6	-5.5	-5.1	-6.4	-6.5	-6.4	-8.3	-4.5	-3.2	-3.1	-4.4	-5.2	-4.4	-3.4	-3.1	-3.0	-3.0	-1.7
-6.4	-7.8	-7.8	-7.7	-9.3	-10.1	-10.2	-6.9	-6.6	-5.5	-4.5	-3.5	-3.1	-4.9	-7.4	-9.6	-10.4	-11.0	-9.3	-9.8	-11.1	-10.3	-10.3	-13.2	-12.8	-10.7	-7.5	-4.8	-3.1	-4.5	-4.7	-4.7	-3.9	-2.8	-4.0	-5.4
-9.5	-10.6	-9.0	-8.2	-8.5	-7.8	-6.3	-5.0	-4.9	-6.4	-6.3	-6.5	-9.8	-10.2	-9.6	-7.9	-7.4	-7.4	-8.6	-10.9	-10.4	-7.4	-8.9	-10.7	-11.0	-8.8	-7.6	-7.4	-5.1	-5.4	-6.2	-6.5	-7.2	-7.3	-8.3	-9.0
-5.2	-6.1	-6.4	-5.7	-6.0	-5.8	-5.6	-5.9	-5.1	-4.6	-3.0	-3.4	-4.7	-5.4	-5.3	-4.9	-4.6	-3.8	-4.5	-4.7	-3.5	-4.5	-6.0	-6.9	-5.4	-4.9	-4.3	-3.1	-3.7	-3.9	-4.0	-3.8	-4.0	-3.9	-4.2	-5.5
-5.5	-7.3	-8.4	-8.9	-10.1	-11.3	-11.2	-10.4	-9.4	-7.9	-3.8	-3.2	-4.5	-7.2	-8.8	-8.7	-10.0	-9.4	-9.4	-7.6	-6.5	-7.2	-7.6	-7.7	-6.7	-6.8	-5.1	-4.0	-5.1	-5.8	-6.1	-5.1	-4.4	-4.0	-4.8	-5.4
-6.0	-6.7	-6.5	-7.4	-10.0	-10.9	-12.8	-13.4	-13.7	-13.1	-9.2	-6.4	-7.2	-7.5	-7.5	-9.6	-12.4	-14.5	-16.0	-12.8	-11.3	-10.4	-10.5	-9.4	-9.1	-10.0	-10.0	-9.4	-9.0	-8.8	-9.3	-10.5	-10.6	-9.5	-7.0	-5.8
-4.5	-4.2	-4.3	-3.6	-4.7	-5.6	-6.4	-8.1	-8.6	-8.7	-9.5	-7.2	-7.5	-6.4	-4.2	-6.2	-7.8	-9.3	-11.7	-11.6	-11.2	-11.3	-10.6	-8.3	-7.4	-8.2	-10.8	-11.2	-10.5	-9.3	-7.8	-8.1	-8.9	-8.0	-6.4	-6.8
-3.6	-2.5	-2.8	-2.8	-3.3	-2.9	-2.5	-3.0	-3.1	-3.0	-2.8	-2.2	-3.0	-3.4	-2.7	-2.8	-2.3	-2.9	-3.5	-5.1	-5.6	-5.8	-5.3	-4.9	-4.6	-4.5	-4.9	-4.4	-3.4	-2.8	-3.3	-3.5	-3.7	-3.2	-3.1	-2.7
-1.1	-.3	-1.1	-.9	-.6	-1.3	-1.1	-.4	-.4	.0	.4	.1	.1	-.1	-.6	-.4	.1	.3	.7	.0	-.2	-.3	-1.0	-1.2	-1.0	-.5	.2	.2	.2	-.1	-.4	-1.4	-2.0	-2.0	-.9	-.2
1.2	1.7	2.1	1.5	1.7	1.4	1.6	1.6	2.0	2.0	1.7	1.3	1.0	1.6	2.1	2.5	2.8	3.2	3.7	3.3	3.1	2.8	2.7	2.4	2.3	2.6	2.8	2.4	2.3	2.3	2.2	1.6	.8	.7	.7	1.4
4.6	4.9	4.9	4.0	3.7	3.5	3.6	3.2	3.4	3.7	3.5	3.7	2.8	2.7	3.4	4.3	5.1	5.5	5.3	5.5	5.8	5.9	7.1	9.1	7.5	6.2	8.1	9.1	8.9	7.3	7.6	8.5	6.3	5.3	4.7	4.5
8.2	7.9	7.9	8.2	8.8	9.0	8.3	7.6	8.6	8.7	7.6	7.3	6.0	6.1	6.6	8.9	12.3	18.7	23.0	26.2	27.2	30.1	33.4	31.2	23.6	24.0	31.3	36.5	33.2	33.0	32.4	29.1	26.8	22.5	12.7	9.0
13.7	12.7	12.4	13.3	13.4	14.2	15.9	19.1	21.0	17.8	15.2	13.8	14.2	14.7	16.8	19.6	22.6	25.7	28.4	30.6	32.0	34.4	38.7	41.1	41.5	41.5	40.3	38.8	36.5	34.7	31.7	29.1	26.4	22.6	16.4	14.3

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



2.0	2.1	2.1	2.1	2.4	2.5	2.7	2.7	2.7	2.6	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.1	2.3	2.2	2.2	2.2	2.3	2.3	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.0	1.9
2.4	2.5	2.6	3.0	3.1	3.1	3.2	3.1	3.1	3.2	2.9	2.7	2.8	2.6	2.6	2.7	2.6	2.4	2.3	2.3	2.3	2.5	2.5	2.4	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.4	2.4	2.4	2.4
3.0	3.4	3.5	2.9	2.6	2.7	2.9	3.1	3.2	3.1	3.2	2.9	2.8	3.0	3.4	2.9	2.9	3.0	3.0	2.9	3.1	2.9	2.7	2.6	2.6	2.8	3.2	3.2	3.1	2.9	2.9	2.9	2.9	3.2	3.0	2.9
2.7	3.0	3.1	2.9	2.8	2.8	3.1	3.5	3.4	3.6	4.1	3.5	3.0	3.0	3.2	3.1	3.3	3.5	3.8	3.7	3.5	3.4	3.4	3.6	3.6	4.0	4.2	4.2	3.6	3.4	3.1	3.0	2.9	3.3	3.6	2.9
3.3	3.6	3.4	3.5	3.8	4.3	3.8	3.6	3.9	3.8	4.2	3.6	3.5	3.3	3.2	3.6	4.1	4.3	4.6	4.0	3.9	4.1	3.1	4.0	4.5	4.8	4.9	5.1	5.4	4.4	3.8	3.3	3.1	3.8	3.3	3.5
3.9	3.8	4.1	4.5	4.0	4.8	5.1	4.2	4.1	4.3	4.5	4.1	3.9	4.4	4.6	4.5	4.5	4.7	4.9	4.4	4.7	5.4	5.3	4.2	4.9	4.7	4.2	4.4	5.2	4.9	4.5	4.2	4.0	4.2	4.1	4.1
4.4	4.2	4.2	4.6	3.7	4.8	5.8	5.3	4.0	4.2	4.7	4.4	4.0	4.5	4.3	4.6	5.0	5.0	4.9	5.4	5.9	5.9	5.5	5.0	4.3	4.6	3.6	3.4	2.9	4.1	4.3	4.1	3.5	3.2	3.9	4.4
3.9	3.7	4.3	4.2	4.2	5.0	5.2	3.8	3.0	3.1	3.5	3.7	3.6	3.0	3.1	4.1	4.1	4.2	4.4	4.8	5.0	5.5	4.0	3.5	4.6	4.4	3.2	3.8	2.7	2.5	2.7	3.2	3.4	3.2	3.2	3.5
3.0	2.8	3.0	2.9	3.2	3.2	3.1	3.0	2.7	2.8	2.7	3.0	3.4	3.3	3.3	3.1	2.8	2.7	2.9	3.5	3.7	2.8	2.7	3.3	3.3	2.8	2.7	2.0	2.4	2.5	2.4	2.4	2.8	2.8	2.7	3.1
3.2	3.1	3.3	3.1	3.5	3.2	2.7	2.8	2.9	3.2	2.9	2.7	3.4	3.8	3.6	3.8	3.9	4.1	4.4	4.6	4.1	3.6	3.6	3.6	3.7	3.7	3.0	2.6	3.3	3.4	3.5	3.7	3.1	2.4	3.0	3.3
4.0	3.3	3.8	4.6	4.0	4.0	3.5	2.9	3.3	3.8	5.0	4.4	4.7	4.8	4.8	4.1	3.7	3.1	2.7	3.1	3.2	4.2	4.5	3.8	3.8	3.5	3.5	4.1	4.4	4.8	4.7	4.1	4.1	4.4	4.2	3.6
4.6	4.6	4.7	4.5	5.0	4.6	4.6	4.0	4.4	4.6	4.7	4.9	5.3	4.9	5.0	4.9	4.5	4.1	3.8	3.3	4.4	4.5	4.4	4.3	4.3	4.6	4.6	4.6	4.6	5.1	5.7	4.6	3.9	3.6	4.2	4.8
4.2	4.4	4.5	4.8	4.8	4.2	4.2	4.1	4.1	4.3	4.8	4.2	4.5	4.6	4.2	4.2	4.0	4.2	4.6	5.0	4.8	4.6	4.2	4.3	4.8	4.7	4.6	4.6	4.1	4.3	4.3	4.2	4.0	3.8	4.1	4.0
3.7	3.5	3.9	3.9	3.7	3.9	3.9	3.6	3.5	3.6	3.8	3.4	3.6	3.7	3.6	3.5	3.6	3.4	3.8	3.7	3.8	3.7	4.3	4.1	4.0	3.8	3.4	3.3	3.4	3.7	3.9	3.6	3.7	3.7	3.7	3.2
3.3	3.1	3.4	3.6	3.4	3.6	3.4	3.3	3.1	3.1	3.3	3.6	3.7	3.6	3.2	3.2	3.2	2.8	2.6	2.8	3.0	3.2	3.0	3.0	3.0	2.8	3.0	3.0	3.0	2.9	3.1	3.1	3.6	3.6	3.7	3.4
3.0	3.2	3.1	3.2	3.2	3.1	2.8	2.8	2.8	2.9	3.0	3.3	4.0	4.0	3.3	2.8	2.8	2.6	2.6	2.7	2.7	2.9	4.6	6.3	4.6	2.9	5.2	6.7	7.1	5.7	6.4	7.4	5.6	4.2	3.2	3.0
2.8	3.0	3.4	3.7	4.6	5.1	4.9	4.9	5.2	4.8	3.7	3.3	3.3	3.2	3.0	4.6	6.0	7.7	8.4	9.7	11.3	11.3	9.2	6.3	8.6	8.9	8.2	9.1	8.2	8.7	7.8	5.5	5.2	5.3	5.5	2.9
7.6	6.7	6.6	6.7	6.6	6.3	6.1	5.8	5.5	5.0	5.7	6.0	6.4	6.5	6.7	6.2	6.0	5.3	5.1	4.5	3.8	4.0	5.2	5.8	5.7	5.8	5.3	4.6	3.8	3.8	3.3	3.6	4.4	5.8	8.0	7.6

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: HIRS4 (400 hPa)
NOAA15, using all observations

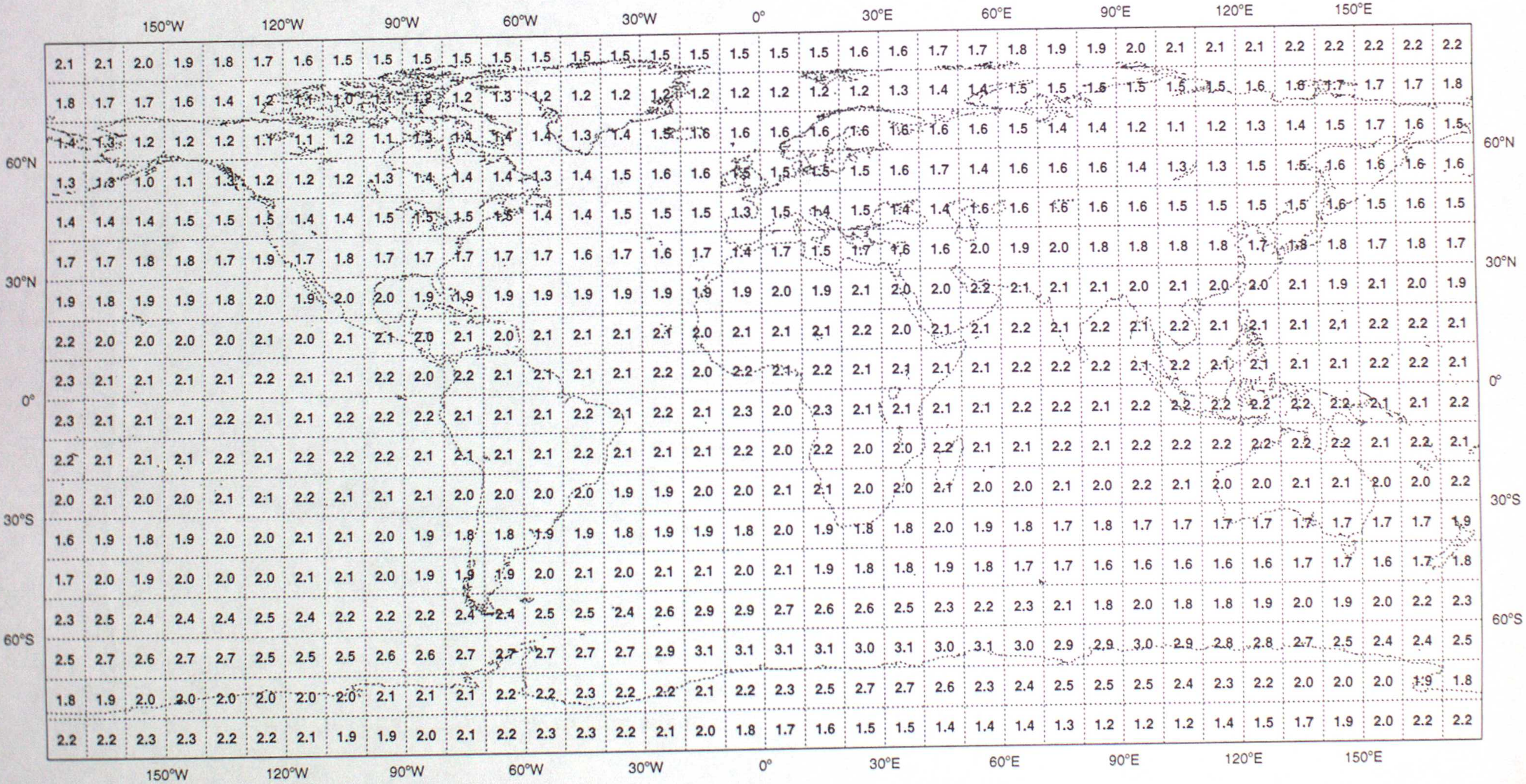


-4.4	-4.4	-4.5	-4.6	-4.6	-4.7	-4.8	-4.9	-4.9	-4.9	-4.9	-4.9	-4.9	-4.8	-4.9	-4.9	-4.8	-4.7	-4.7	-4.6	-4.5	-4.5	-4.4	-4.3	-4.3	-4.2	-4.2	-4.2	-4.2	-4.1	-4.2	-4.2	-4.2	-4.3	-4.3	-4.3
-4.5	-4.6	-4.6	-4.6	-4.7	-4.8	-5.0	-5.1	-5.2	-5.3	-5.4	-5.4	-5.4	-5.1	-5.0	-5.1	-5.0	-5.0	-5.0	-4.9	-4.9	-4.9	-4.9	-4.8	-4.8	-4.8	-4.7	-4.7	-4.6	-4.6	-4.5	-4.4	-4.4	-4.4	-4.4	-4.4
-4.1	-4.4	-4.6	-4.6	-4.6	-4.6	-4.7	-4.7	-4.8	-4.7	-4.8	-4.7	-4.8	-4.6	-4.6	-4.5	-4.3	-4.3	-4.2	-4.3	-4.4	-4.6	-4.7	-4.9	-4.8	-4.6	-4.5	-4.4	-4.5	-4.5	-4.5	-4.3	-4.2	-4.3	-4.0	-3.9
-3.8	-4.6	-4.6	-4.8	-4.4	-4.0	-4.0	-4.2	-4.2	-3.9	-3.9	-3.8	-4.0	-4.3	-4.1	-3.8	-3.6	-3.5	-3.5	-3.5	-3.7	-3.8	-4.1	-4.0	-3.9	-3.7	-3.5	-3.5	-3.6	-3.9	-4.1	-4.0	-3.7	-3.9	-3.8	-3.5
-3.8	-3.5	-3.7	-3.7	-3.5	-3.3	-3.4	-3.6	-3.5	-3.5	-3.5	-3.5	-3.6	-3.7	-3.6	-3.5	-3.3	-3.6	-3.1	-3.4	-3.2	-3.5	-3.7	-3.5	-3.5	-3.4	-3.2	-3.1	-3.1	-3.4	-3.7	-3.7	-3.6	-3.4	-3.6	-3.3
-3.8	-3.5	-3.2	-3.4	-3.3	-3.4	-3.5	-3.4	-3.2	-3.2	-3.3	-3.4	-3.3	-3.2	-3.2	-3.2	-3.2	-3.5	-3.0	-3.5	-3.1	-3.6	-3.8	-4.0	-4.2	-4.1	-3.7	-3.6	-3.5	-3.7	-3.8	-3.8	-3.9	-3.5	-4.0	-3.3
-3.6	-3.8	-3.3	-3.4	-3.5	-3.5	-3.7	-3.9	-3.6	-3.7	-3.7	-3.7	-3.6	-3.4	-3.5	-3.5	-3.6	-3.8	-3.6	-4.0	-3.8	-4.3	-4.5	-5.0	-5.2	-5.4	-5.3	-5.2	-4.8	-5.2	-5.0	-4.7	-4.6	-3.9	-4.3	-3.7
-4.0	-4.4	-4.0	-3.9	-3.9	-3.9	-4.1	-4.3	-4.1	-4.6	-4.4	-4.3	-4.5	-4.2	-4.1	-4.0	-4.2	-4.2	-4.6	-4.6	-4.5	-4.7	-4.8	-5.1	-5.0	-5.2	-5.1	-5.5	-4.9	-5.0	-4.9	-4.8	-4.8	-4.3	-4.4	-4.4
-4.0	-4.6	-4.4	-4.3	-4.3	-4.3	-4.4	-4.5	-4.3	-4.6	-4.3	-4.2	-4.3	-4.3	-4.4	-4.2	-4.5	-4.0	-4.6	-4.3	-4.4	-4.4	-4.5	-4.7	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5	-4.3	-4.3	-4.7
-4.1	-4.6	-4.4	-4.3	-4.4	-4.5	-4.5	-4.5	-4.5	-4.5	-4.4	-4.2	-4.3	-4.4	-4.5	-4.3	-4.7	-4.2	-4.8	-4.1	-4.6	-4.4	-4.4	-4.6	-4.5	-4.4	-4.6	-4.5	-4.5	-4.5	-4.5	-4.4	-4.4	-4.5	-4.1	-4.6
-3.9	-4.0	-3.8	-3.7	-3.8	-3.9	-4.0	-3.9	-4.1	-4.1	-4.0	-3.8	-3.9	-3.9	-3.9	-3.9	-4.2	-3.9	-4.8	-4.0	-4.4	-4.1	-4.0	-4.1	-4.3	-4.3	-4.6	-4.5	-4.5	-4.4	-4.4	-4.5	-4.4	-4.6	-4.0	-4.4
-2.6	-2.4	-2.6	-2.4	-2.4	-2.6	-2.7	-2.5	-2.6	-2.5	-2.6	-2.6	-2.7	-2.7	-2.4	-2.6	-2.5	-2.7	-3.1	-2.9	-3.1	-2.8	-2.7	-2.6	-2.8	-2.8	-3.1	-2.9	-2.9	-2.6	-2.5	-2.7	-2.7	-3.0	-2.7	-2.9
-1.2	-.6	-1.0	-.9	-.8	-1.0	-.8	-.7	-.9	-.7	-.8	-.8	-.9	-1.0	-.8	-1.2	-1.0	-1.6	-1.5	-1.7	-1.7	-1.6	-1.6	-1.5	-1.5	-1.3	-1.4	-1.3	-1.4	-1.3	-1.2	-1.2	-1.0	-1.2	-1.2	-1.0
-.4	.5	.5	.5	.8	.7	.9	.9	.8	.8	.9	1.0	1.0	1.1	1.1	.8	.9	.2	.4	-.1	-.2	-.3	-.5	-.6	-.8	-.9	-1.0	-1.2	-1.1	-1.0	-.7	-.5	-.3	-.5	-.7	-.1
1.4	1.9	2.3	2.2	2.3	2.6	2.9	2.9	3.0	3.1	3.4	3.6	3.6	3.8	3.7	3.8	3.5	3.3	3.3	2.8	2.6	2.4	1.9	1.5	1.1	.7	.4	.0	.0	.0	.2	.5	.6	.7	.7	1.2
4.1	4.6	5.0	5.0	5.1	5.3	5.6	5.8	6.0	6.2	6.5	6.8	6.9	7.0	7.2	7.5	7.6	7.5	7.2	7.1	7.1	7.0	6.8	6.5	5.9	5.3	4.9	4.7	4.4	4.0	3.8	3.8	3.5	3.3	3.4	3.7
7.6	7.9	8.2	8.6	8.7	8.8	8.8	8.8	9.0	9.1	9.2	9.4	9.5	9.8	10.0	10.3	10.5	11.0	11.6	12.2	12.5	12.8	13.0	12.3	11.2	11.0	11.6	12.2	11.3	11.1	10.6	9.9	9.2	8.5	7.7	7.5
10.6	10.6	10.7	10.8	11.0	11.2	11.5	11.9	12.1	11.9	11.7	11.6	11.7	11.7	11.8	12.0	12.3	12.5	12.9	13.4	13.8	14.3	14.9	15.3	15.3	15.3	15.0	14.7	14.2	13.7	13.1	12.5	12.0	11.5	11.0	10.7

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001

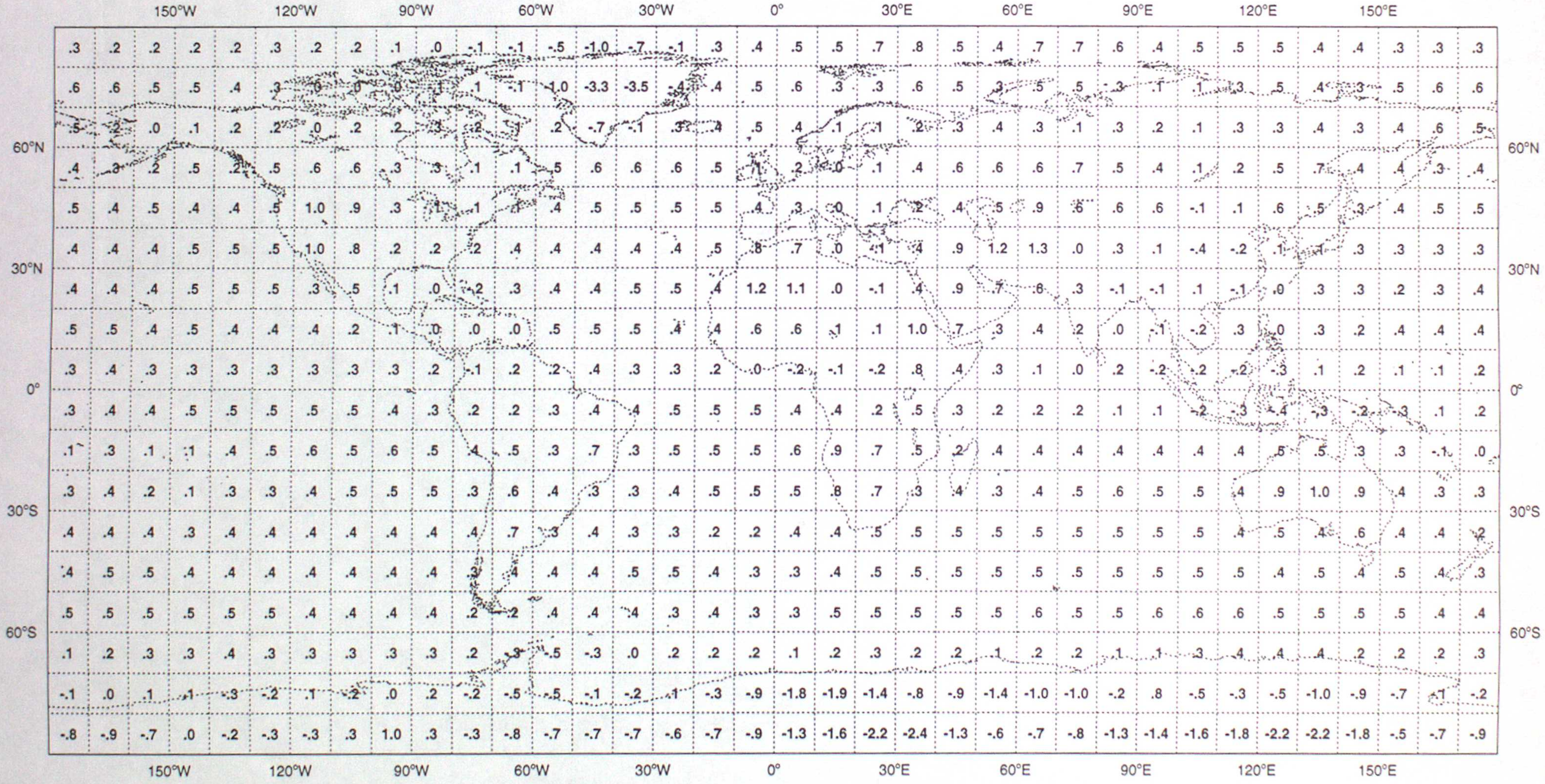
Channel: HIRS4 (400 hPa)

NOAA15, using all observations



2.1	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2
1.8	1.7	1.7	1.6	1.4	1.2	1.1	1.0	1.1	1.2	1.2	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.8	1.7	1.7	1.7	1.8
1.4	1.3	1.2	1.2	1.2	1.1	1.1	1.2	1.1	1.3	1.4	1.4	1.4	1.3	1.4	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.4	1.4	1.2	1.1	1.2	1.3	1.4	1.5	1.7	1.6	1.5
1.3	1.3	1.0	1.1	1.3	1.2	1.2	1.2	1.3	1.4	1.4	1.4	1.3	1.4	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.6	1.7	1.4	1.6	1.6	1.6	1.4	1.3	1.3	1.5	1.5	1.6	1.6	1.6	1.6
1.4	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.3	1.5	1.4	1.5	1.4	1.4	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.6	1.5	1.6	1.5
1.7	1.7	1.8	1.8	1.7	1.9	1.7	1.8	1.7	1.7	1.7	1.7	1.7	1.6	1.7	1.6	1.7	1.4	1.7	1.5	1.7	1.6	1.6	2.0	1.9	2.0	1.8	1.8	1.8	1.8	1.7	1.8	1.8	1.7	1.8	1.7
1.9	1.8	1.9	1.9	1.8	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.1	2.0	2.0	2.2	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.1	1.9	2.1	2.0	1.9
2.2	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.2	2.0	2.1	2.1	2.2	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.1
2.3	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.0	2.2	2.1	2.1	2.1	2.1	2.2	2.0	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.1
2.3	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.3	2.0	2.3	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2
2.2	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.0	2.2	2.0	2.0	2.2	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1
2.0	2.1	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.2	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.2
1.6	1.9	1.8	1.9	2.0	2.0	2.1	2.1	2.0	1.9	1.8	1.8	1.9	1.9	1.8	1.9	1.9	1.8	2.0	1.9	1.8	1.8	2.0	1.9	1.8	1.7	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.9
1.7	2.0	1.9	2.0	2.0	2.0	2.1	2.1	2.0	1.9	1.9	1.9	2.0	2.1	2.0	2.1	2.1	2.0	2.1	1.9	1.8	1.8	1.9	1.8	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.6	1.7	1.8
2.3	2.5	2.4	2.4	2.4	2.5	2.4	2.2	2.2	2.2	2.4	2.4	2.5	2.5	2.4	2.6	2.9	2.9	2.7	2.6	2.6	2.5	2.3	2.2	2.3	2.1	1.8	2.0	1.8	1.8	1.9	2.0	1.9	2.0	2.2	2.3
2.5	2.7	2.6	2.7	2.7	2.5	2.5	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.9	3.1	3.1	3.1	3.1	3.0	3.1	3.0	3.1	3.0	2.9	2.9	3.0	2.9	2.8	2.8	2.7	2.5	2.4	2.4	2.5
1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.2	2.2	2.1	2.2	2.3	2.5	2.7	2.7	2.6	2.3	2.4	2.5	2.5	2.5	2.4	2.3	2.2	2.0	2.0	2.0	1.9	1.8
2.2	2.2	2.3	2.3	2.2	2.2	2.1	1.9	1.9	2.0	2.1	2.2	2.3	2.3	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.4	1.3	1.2	1.2	1.2	1.4	1.5	1.7	1.9	2.0	2.2	2.2

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



.3	.2	.2	.2	.2	.3	.2	.2	.1	.0	-.1	-.1	-.5	-1.0	-.7	-.1	.3	.4	.5	.5	.7	.8	.5	.4	.7	.7	.6	.4	.5	.5	.5	.4	.4	.3	.3	.3
.6	.6	.5	.5	.4	.3	.0	.0	.0	.1	.1	-.1	-1.0	-3.3	-3.5	-.4	.4	.5	.6	.3	.3	.6	.5	.3	.5	.5	-.3	.1	.1	.3	.5	.4	.3	.5	.6	.6
.5	.2	.0	.1	.2	.2	.0	.2	.2	.3	.2	.1	.2	-.7	-.1	.3	.4	.5	.4	.1	.1	.2	.3	.4	.3	.1	.3	.2	.1	.3	.3	.4	.3	.4	.6	.5
.4	.3	.2	.5	.2	.5	.6	.6	.3	.3	.1	.1	.5	.6	.6	.6	.5	.1	.2	.0	.1	.4	.6	.6	.6	.7	.5	.4	.1	.2	.5	.7	.4	.4	.3	.4
.5	.4	.5	.4	.4	.5	1.0	.9	.3	.1	.1	.1	.4	.5	.5	.5	.5	.4	.3	.0	.1	.2	.4	.5	.9	.6	.6	.6	-.1	.1	.6	.5	.3	.4	.5	.5
.4	.4	.4	.5	.5	.5	1.0	.8	.2	.2	.2	.4	.4	.4	.4	.4	.5	.8	.7	.0	.1	.4	.9	1.2	1.3	.0	.3	.1	-.4	-.2	.1	.1	.3	.3	.3	.3
.4	.4	.4	.5	.5	.5	.3	.5	.1	.0	-.2	.3	.4	.4	.5	.5	.4	1.2	1.1	.0	-.1	.4	.9	.7	.6	.3	-.1	-.1	.1	-.1	.0	.3	.3	.2	.3	.4
.5	.5	.4	.5	.4	.4	.4	.2	.1	.0	.0	.0	.5	.5	.5	.4	.4	.6	.6	.1	.1	1.0	.7	.3	.4	.2	.0	-.1	-.2	.3	.0	.3	.2	.4	.4	.4
.3	.4	.3	.3	.3	.3	.3	.3	.3	.2	-.1	.2	.2	.4	.3	.3	.2	.0	-.2	-.1	-.2	.8	.4	.3	.1	.0	.2	-.2	-.2	-.2	-.3	.1	.2	.1	.1	.2
.3	.4	.4	.5	.5	.5	.5	.5	.4	.3	.2	.2	.3	.4	.4	.5	.5	.5	.4	.4	.2	.5	.3	.2	.2	.2	.1	.1	-.2	-.3	-.4	-.3	-.2	-.3	.1	.2
.1	.3	.1	.1	.4	.5	.6	.5	.6	.5	.4	.5	.3	.7	.3	.5	.5	.5	.6	.9	.7	.5	.2	.4	.4	.4	.4	.4	.4	.4	.5	.5	.3	.3	-.1	.0
.3	.4	.2	.1	.3	.3	.4	.5	.5	.5	.3	.6	.4	.3	.3	.4	.5	.5	.5	.8	.7	.3	.4	.3	.4	.5	.6	.5	.5	.4	.9	1.0	.9	.4	.3	.3
.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.7	.3	.4	.3	.3	.2	.2	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.4	.6	.4	.4	.2
.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.5	.5	.4	.3	.3	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.4	.5	.4	.3
.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.2	.2	.4	.4	.4	.3	.4	.3	.3	.5	.5	.5	.5	.5	.6	.5	.5	.6	.6	.6	.5	.5	.5	.5	.4	.4
.1	.2	.3	.3	.4	.3	.3	.3	.3	.3	.2	-.3	-.5	-.3	.0	.2	.2	.2	.1	.2	.3	.2	.2	.1	.2	.2	.1	.1	.3	.4	.4	.4	.2	.2	.2	.3
-.1	.0	.1	.1	-.3	-.2	.1	-.2	.0	.2	-.2	-.5	-.5	-.1	-.2	.1	-.3	-.9	-1.8	-1.9	-1.4	-.8	-.9	-1.4	-1.0	-1.0	-.2	.8	-.5	-.3	-.5	-1.0	-.9	-.7	.1	-.2
-.8	-.9	-.7	.0	-.2	-.3	-.3	.3	1.0	.3	-.3	-.8	-.7	-.7	-.7	-.6	-.7	-.9	-1.3	-1.6	-2.2	-2.4	-1.3	-.6	-.7	-.8	-1.3	-1.4	-1.6	-1.8	-2.2	-2.2	-1.8	-.5	-.7	-.9

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations

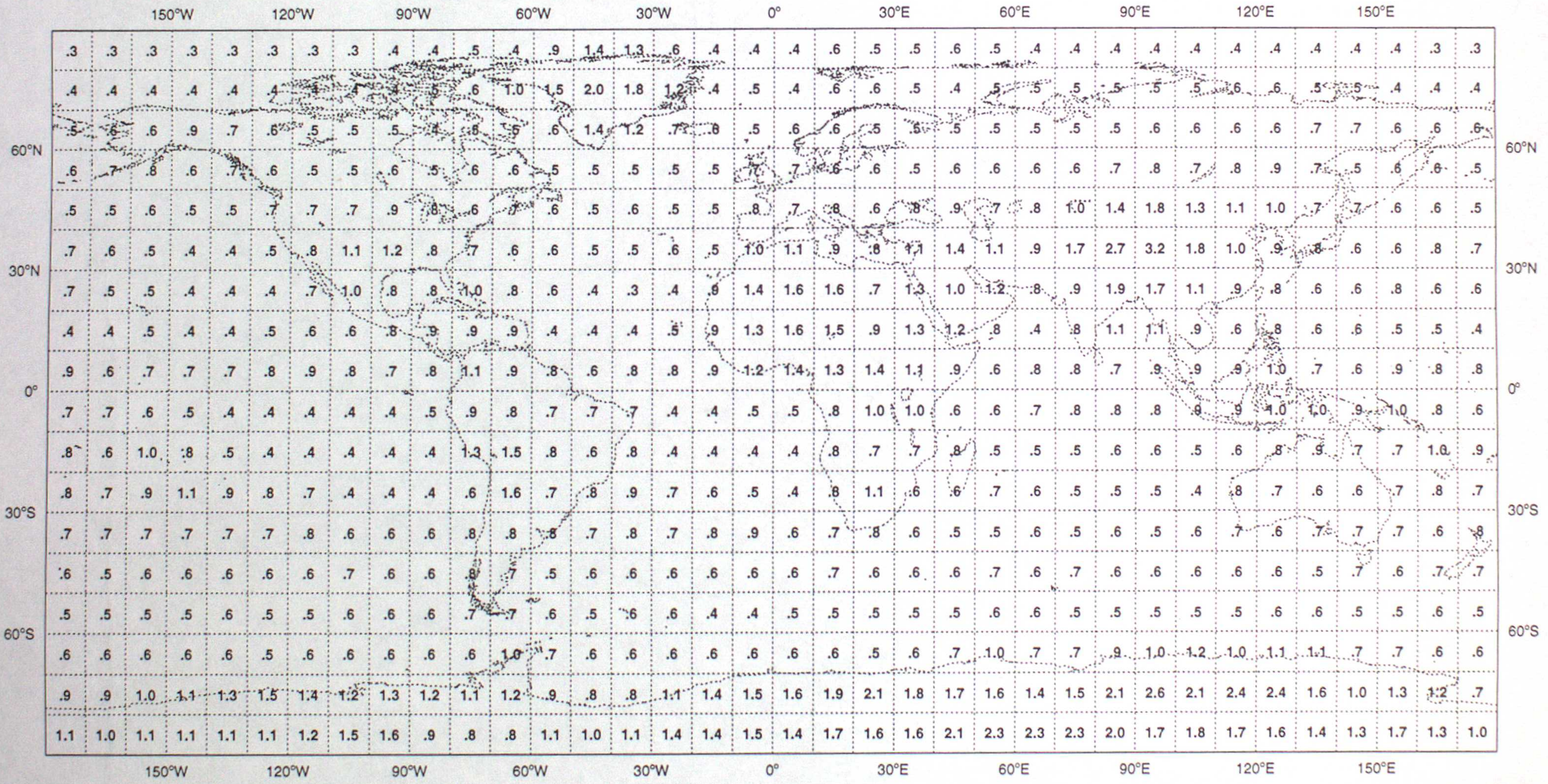

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .5 .4 .9 1.4 1.3 .6 .4 .4 .4 .6 .5 .5 .6 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .6 1.0 1.5 2.0 1.8 1.2 .4 .5 .4 .6 .6 .5 .4 .5 .5 .5 .5 .5 .5 .6 .6 .5 .5 .4 .4 .4
.5 .6 .6 .9 .7 .6 .5 .5 .5 .4 .6 .5 .6 1.4 1.2 .7 .8 .5 .6 .6 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .7 .7 .6 .6 .6
.6 .7 .8 .6 .7 .6 .5 .5 .6 .5 .6 .6 .5 .5 .5 .5 .5 .7 .7 .6 .6 .5 .6 .6 .6 .6 .7 .8 .7 .8 .9 .7 .5 .6 .6 .5
.5 .5 .6 .5 .5 .7 .7 .7 .9 .8 .6 .7 .6 .5 .6 .5 .5 .8 .7 .8 .6 .8 .9 .7 .8 1.0 1.4 1.8 1.3 1.1 1.0 .7 .7 .6 .6 .5
.7 .6 .5 .4 .4 .5 .8 1.1 1.2 .8 .7 .6 .6 .5 .5 .6 .5 1.0 1.1 .9 .8 1.1 1.4 1.1 .9 1.7 2.7 3.2 1.8 1.0 .9 .8 .6 .6 .8 .7
.7 .5 .5 .4 .4 .4 .7 1.0 .8 .8 1.0 .8 .6 .4 .3 .4 .9 1.4 1.6 1.6 .7 1.3 1.0 1.2 .8 .9 1.9 1.7 1.1 .9 .8 .6 .6 .8 .6 .6
.4 .4 .5 .4 .4 .5 .6 .6 .8 .9 .9 .9 .4 .4 .4 .5 .9 1.3 1.6 1.5 .9 1.3 1.2 .8 .4 .8 1.1 1.1 .9 .6 .8 .6 .6 .5 .5 .4
.9 .6 .7 .7 .7 .8 .9 .8 .7 .8 1.1 .9 .8 .6 .8 .8 .9 1.2 1.4 1.3 1.4 1.1 .9 .6 .8 .8 .7 .9 .9 .9 1.0 .7 .6 .9 .8 .8
.7 .7 .6 .5 .4 .4 .4 .4 .4 .5 .9 .8 .7 .7 .7 .4 .4 .5 .5 .8 1.0 1.0 .6 .6 .7 .8 .8 .8 .9 .9 1.0 1.0 .9 1.0 .8 .6
.8 .6 1.0 .8 .5 .4 .4 .4 .4 .4 1.3 1.5 .8 .6 .8 .4 .4 .4 .4 .8 .7 .7 .8 .5 .5 .5 .6 .6 .5 .6 .8 .9 .7 .7 1.0 .9
.8 .7 .9 1.1 .9 .8 .7 .4 .4 .4 .6 1.6 .7 .8 .9 .7 .6 .5 .4 .8 1.1 .6 .6 .7 .6 .5 .5 .5 .4 .8 .7 .6 .6 .7 .8 .7
.7 .7 .7 .7 .7 .7 .8 .6 .6 .6 .8 .8 .8 .7 .8 .7 .8 .9 .6 .7 .8 .6 .5 .5 .6 .5 .6 .5 .6 .7 .6 .7 .7 .7 .6 .8
.6 .5 .6 .6 .6 .6 .6 .7 .6 .6 .8 .7 .5 .6 .6 .6 .6 .6 .6 .7 .6 .6 .6 .7 .6 .7 .6 .6 .6 .6 .6 .5 .7 .6 .7 .7
.5 .5 .5 .5 .6 .5 .5 .6 .6 .6 .7 .7 .6 .5 .6 .6 .4 .4 .5 .5 .5 .5 .5 .6 .6 .5 .5 .5 .5 .5 .6 .6 .5 .5 .6 .5
.6 .6 .6 .6 .6 .5 .6 .6 .6 .6 .6 1.0 .7 .6 .6 .6 .6 .6 .6 .6 .5 .6 .7 1.0 .7 .7 .9 1.0 1.2 1.0 1.1 1.1 .7 .7 .6 .6
.9 .9 1.0 1.1 1.3 1.5 1.4 1.2 1.3 1.2 1.1 1.2 .9 .8 .8 1.1 1.4 1.5 1.6 1.9 2.1 1.8 1.7 1.6 1.4 1.5 2.1 2.6 2.1 2.4 2.4 1.6 1.0 1.3 1.2 .7
1.1 1.0 1.1 1.1 1.1 1.1 1.2 1.5 1.6 .9 .8 .8 1.1 1.0 1.1 1.4 1.4 1.5 1.4 1.7 1.6 1.6 2.1 2.3 2.3 2.3 2.0 1.7 1.8 1.7 1.6 1.4 1.3 1.7 1.3 1.0

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

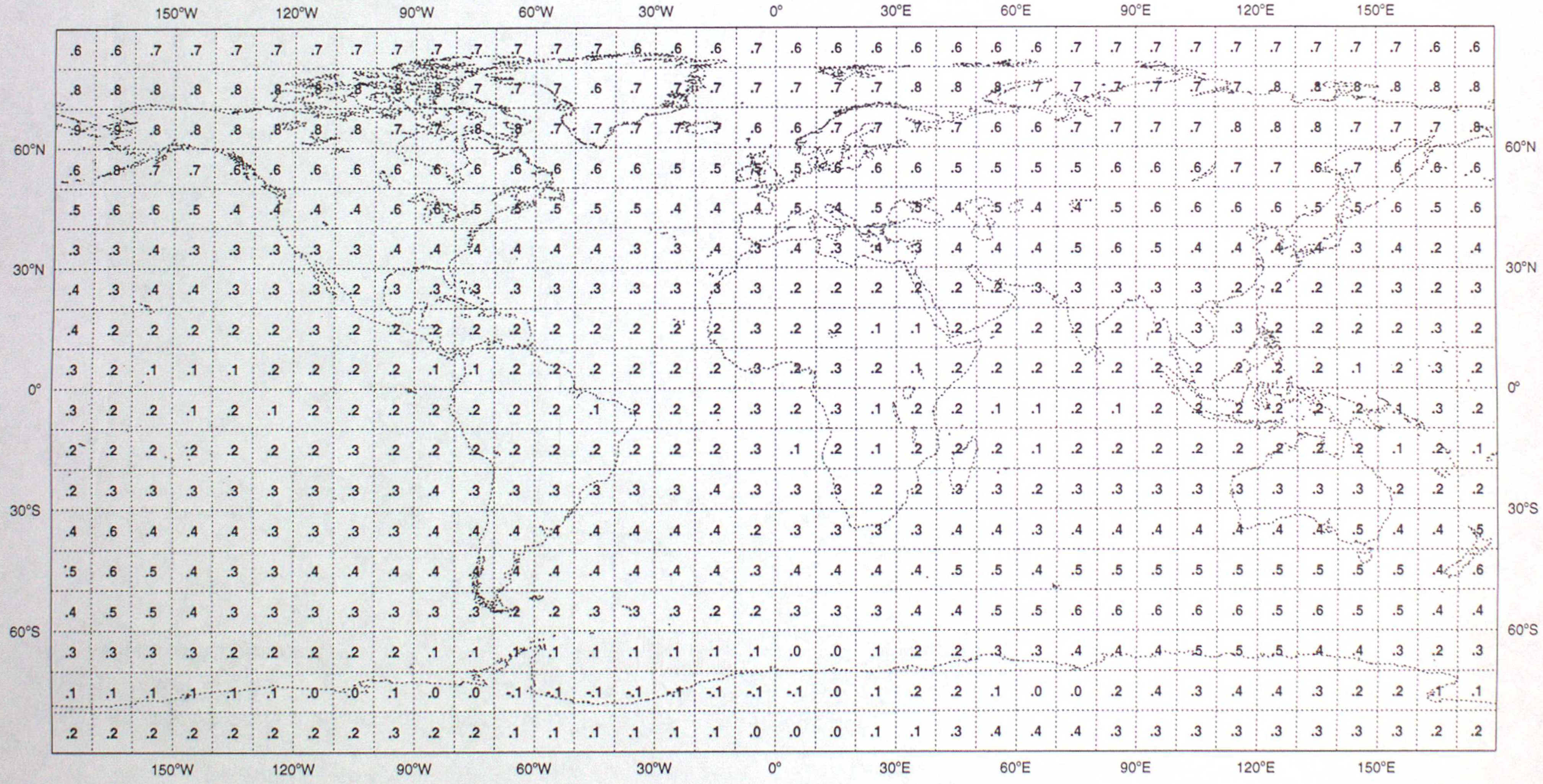

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.6 .6 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .6 .6 .6 .7 .6 .6 .6 .6 .6 .6 .6 .7 .7 .7 .7 .7 .7 .7 .7 .7 .6 .6
.8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .7 .7 .7 .6 .7 .7 .7 .7 .7 .7 .7 .8 .8 .8 .7 .7 .7 .7 .7 .7 .8 .8 .8 .8 .8 .8
.9 .9 .8 .8 .8 .8 .8 .8 .7 .7 .8 .8 .7 .7 .7 .7 .7 .6 .6 .7 .7 .7 .7 .6 .6 .7 .7 .7 .7 .8 .8 .8 .7 .7 .7 .8
.6 .8 .7 .7 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .5 .5 .5 .5 .6 .6 .6 .5 .5 .5 .5 .6 .6 .6 .7 .7 .6 .7 .6 .6 .6
.5 .6 .6 .5 .4 .4 .4 .4 .6 .6 .5 .5 .5 .5 .5 .4 .4 .4 .5 .4 .5 .5 .4 .5 .4 .4 .5 .6 .6 .6 .6 .5 .5 .6 .5 .6
.3 .3 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .4 .3 .4 .3 .4 .3 .4 .4 .4 .5 .6 .5 .4 .4 .4 .4 .3 .4 .2 .4
.4 .3 .4 .4 .3 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .2 .2 .2 .2 .3 .2 .3
.4 .2 .2 .2 .2 .2 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .2 .1 .1 .2 .2 .2 .2 .2 .2 .3 .3 .2 .2 .2 .2 .3 .2
.3 .2 .1 .1 .1 .2 .2 .2 .2 .1 .1 .2 .2 .2 .2 .2 .2 .3 .2 .3 .2 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .2 .3 .2
.3 .2 .2 .1 .2 .1 .2 .2 .2 .2 .2 .2 .2 .1 .2 .2 .2 .3 .2 .3 .1 .2 .2 .1 .1 .2 .1 .2 .2 .2 .2 .2 .2 .1 .3 .2
.2 .2 .2 .2 .2 .2 .2 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .1 .2 .1 .2 .2 .2 .1 .2 .2 .2 .2 .2 .2 .2 .2 .1 .2 .1
.2 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .2 .2 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2
.4 .6 .4 .4 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .2 .3 .3 .3 .3 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .5
.5 .6 .5 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .6
.4 .5 .5 .4 .3 .3 .3 .3 .3 .3 .3 .2 .2 .3 .3 .3 .2 .2 .3 .3 .3 .4 .4 .5 .5 .6 .6 .6 .6 .6 .5 .6 .5 .5 .4 .4
.3 .3 .3 .3 .2 .2 .2 .2 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .0 .1 .2 .2 .3 .3 .4 .4 .4 .5 .5 .5 .4 .4 .3 .2 .3
.1 .1 .1 .1 .1 .1 .0 .0 .1 .0 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 .0 .1 .2 .2 .1 .0 .0 .2 .4 .3 .4 .4 .3 .2 .2 .1 .1
.2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .2 .1 .1 .1 .1 .1 .1 .0 .0 .0 .1 .1 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

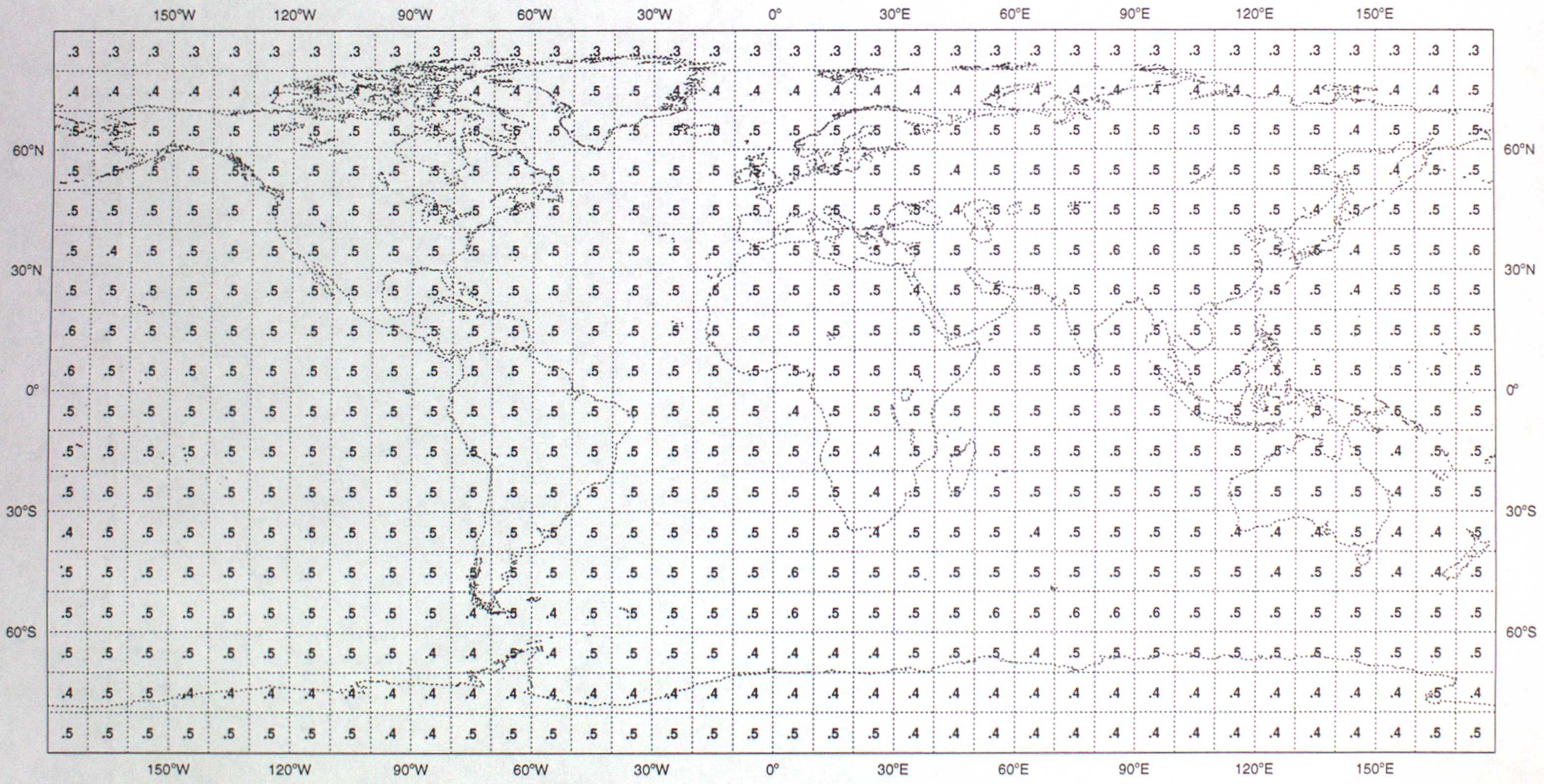
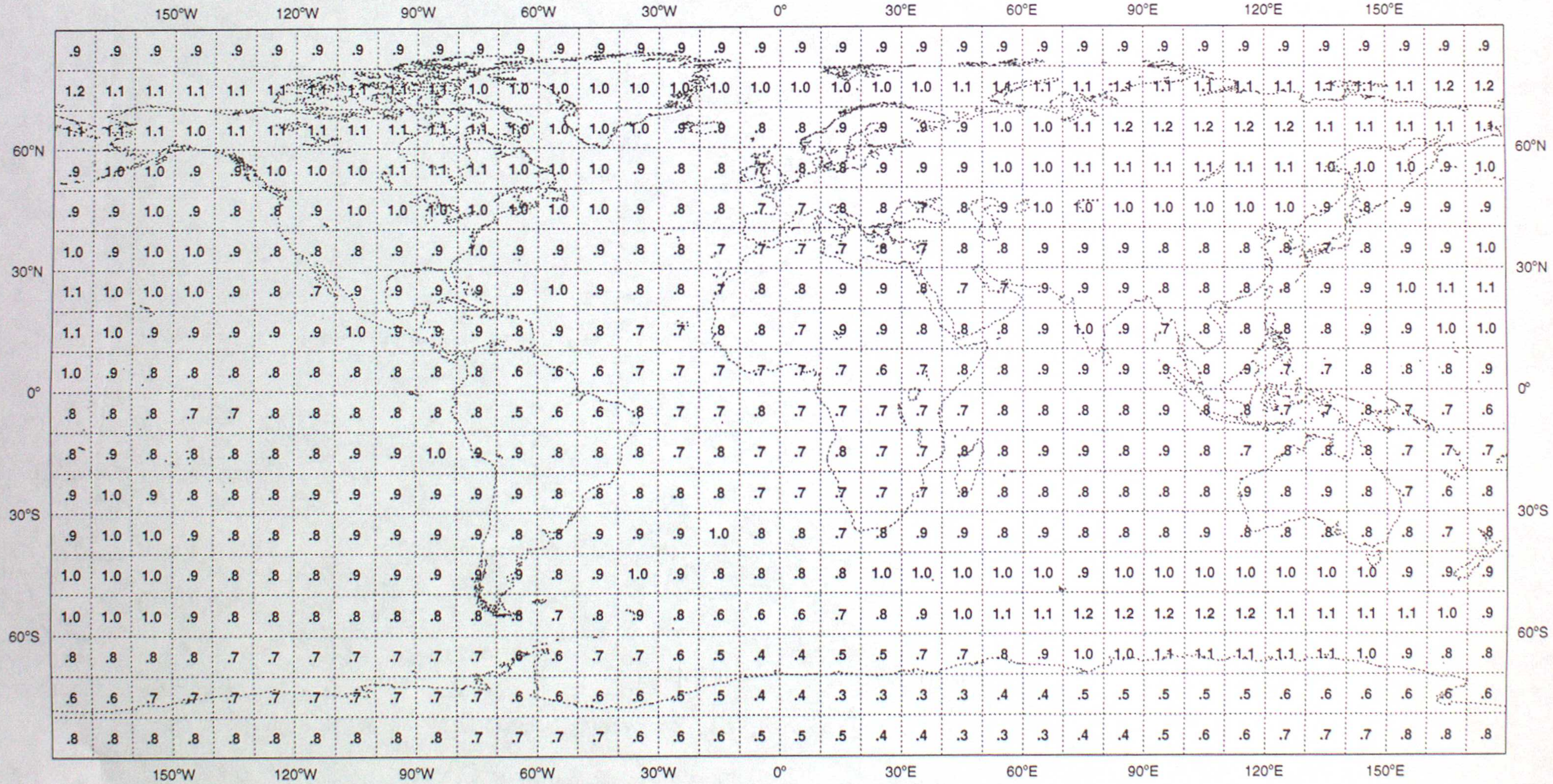

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations



.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2
1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	.9	.9	.8	.8	.9	.9	.9	.9	1.0	1.0	1.1	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1
.9	1.0	1.0	.9	.9	1.0	1.0	1.0	1.1	1.1	1.1	1.0	1.0	1.0	.9	.8	.8	.7	.8	.8	.9	.9	.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	.9	1.0
.9	.9	1.0	.9	.8	.8	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.9	.8	.8	.7	.7	.8	.8	.7	.8	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.9	.8	.9	.9	.9
1.0	.9	1.0	1.0	.9	.8	.8	.8	.9	.9	1.0	.9	.9	.9	.8	.8	.7	.7	.7	.7	.8	.7	.8	.8	.9	.9	.9	.8	.8	.8	.8	.7	.8	.9	.9	1.0
1.1	1.0	1.0	1.0	.9	.8	.7	.9	.9	.9	.9	.9	1.0	.9	.8	.8	.7	.8	.8	.9	.9	.8	.7	.7	.9	.9	.9	.8	.8	.8	.8	.9	.9	1.0	1.1	1.1
1.1	1.0	.9	.9	.9	.9	.9	1.0	.9	.9	.9	.8	.9	.8	.7	.7	.8	.8	.7	.9	.9	.8	.8	.8	.9	1.0	.9	.7	.8	.8	.8	.8	.9	.9	1.0	1.0
1.0	.9	.8	.8	.8	.8	.8	.8	.8	.8	.8	.6	.6	.6	.7	.7	.7	.7	.7	.7	.6	.7	.8	.8	.9	.9	.9	.9	.8	.9	.7	.7	.8	.8	.8	.9
.8	.8	.8	.7	.7	.8	.8	.8	.8	.8	.8	.5	.6	.6	.8	.7	.7	.8	.7	.7	.7	.7	.7	.8	.8	.8	.8	.9	.8	.8	.7	.7	.8	.7	.7	.6
.8	.9	.8	.8	.8	.8	.8	.9	.9	1.0	.9	.9	.8	.8	.8	.7	.8	.7	.7	.8	.7	.7	.8	.8	.9	.9	.8	.9	.8	.7	.8	.8	.8	.7	.7	.7
.9	1.0	.9	.8	.8	.8	.9	.9	.9	.9	.9	.9	.8	.8	.8	.8	.8	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8	.8	.8	.9	.8	.9	.8	.7	.6	.8
.9	1.0	1.0	.9	.8	.8	.8	.9	.9	.9	.9	.8	.8	.9	.9	.9	1.0	.8	.8	.7	.8	.9	.9	.8	.9	.8	.8	.8	.9	.8	.8	.8	.8	.8	.7	.8
1.0	1.0	1.0	.9	.8	.8	.8	.9	.9	.9	.9	.9	.8	.9	1.0	.9	.8	.8	.8	.8	1.0	1.0	1.0	1.0	1.0	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.9	.9	.9
1.0	1.0	1.0	.9	.8	.8	.8	.8	.8	.8	.8	.8	.7	.8	.9	.8	.6	.6	.6	.7	.8	.9	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.0	.9
.8	.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.6	.6	.7	.7	.6	.5	.4	.4	.5	.5	.7	.7	.8	.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.0	.9	.8	.8
.6	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.6	.6	.6	.6	.5	.5	.4	.4	.3	.3	.3	.3	.4	.4	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6
.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.7	.7	.7	.7	.6	.6	.6	.5	.5	.5	.4	.4	.3	.3	.3	.4	.4	.5	.6	.6	.7	.7	.7	.8	.8	.8

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001

Channel: AMSUA-9 (100 hPa)

NOAA15, using all observations

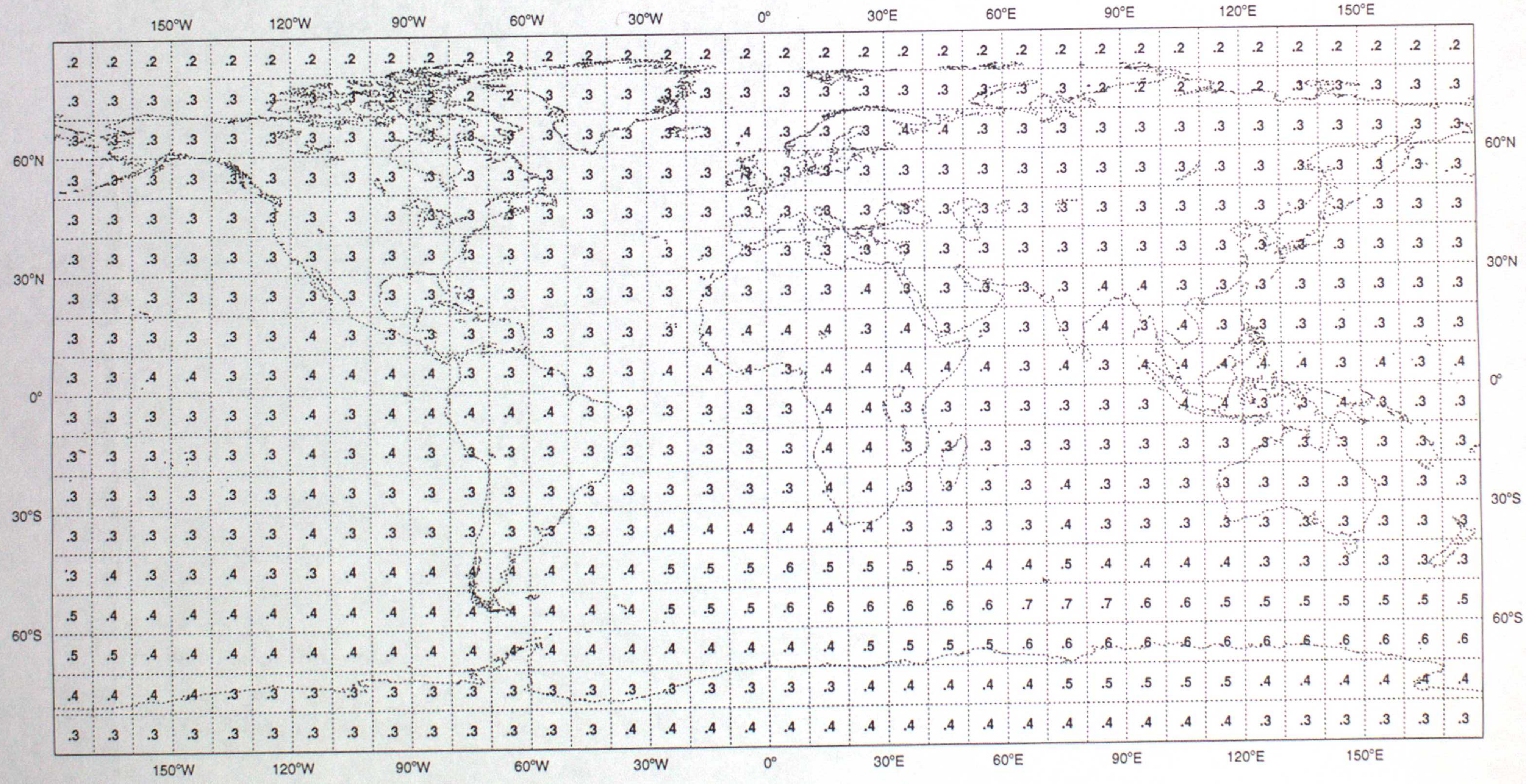
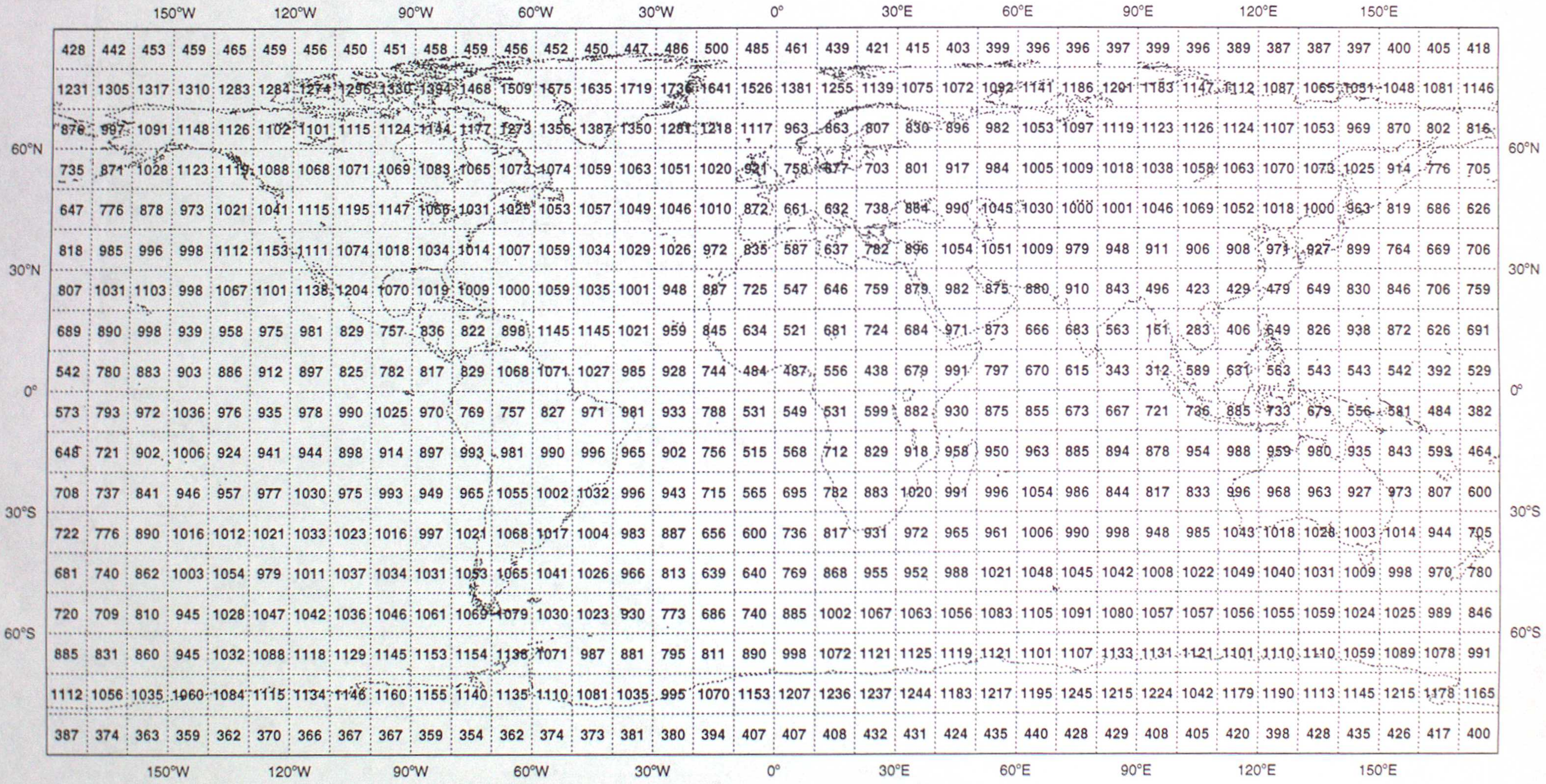
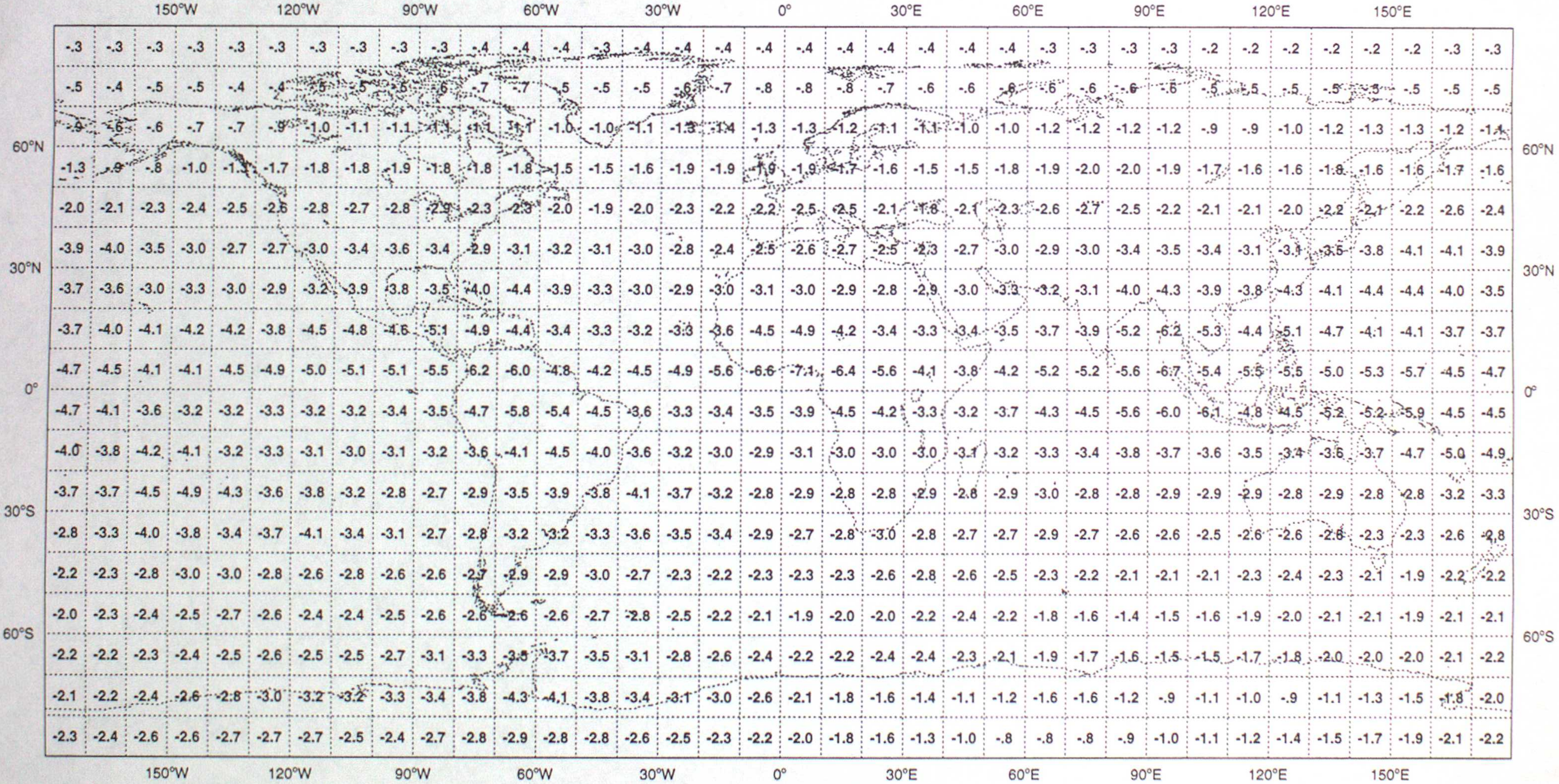

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 40. ATOVS mean daily count. MAY 2001
NOAA16, using all observations
Global average number of observations in 24 hours = 576931



428	442	453	459	465	459	456	450	451	458	459	456	452	450	447	486	500	485	461	439	421	415	403	399	396	396	397	399	396	389	387	387	397	400	405	418
1231	1305	1317	1310	1283	1284	1274	1296	1330	1394	1468	1509	1575	1635	1719	1736	1641	1526	1381	1255	1139	1075	1072	1092	1141	1186	1201	1183	1147	1112	1087	1065	1051	1048	1081	1146
878	997	1091	1148	1126	1102	1101	1115	1124	1134	1177	1273	1356	1387	1350	1281	1218	1117	963	863	807	830	896	982	1053	1097	1119	1123	1126	1124	1107	1053	969	870	802	816
735	871	1028	1123	1119	1088	1068	1071	1069	1083	1065	1073	1074	1059	1063	1051	1020	921	758	677	703	801	917	984	1005	1009	1018	1038	1058	1063	1070	1073	1025	914	776	705
647	776	878	973	1021	1041	1115	1195	1147	1066	1031	1025	1053	1057	1049	1046	1010	872	661	632	738	884	990	1045	1030	1000	1001	1046	1069	1052	1018	1000	963	819	686	626
818	985	996	998	1112	1153	1111	1074	1018	1034	1014	1007	1059	1034	1029	1026	972	835	587	637	782	896	1054	1051	1009	979	948	911	906	908	971	927	899	764	669	706
807	1031	1103	998	1067	1101	1138	1204	1070	1019	1009	1000	1059	1035	1001	948	887	725	547	646	759	879	982	875	880	910	843	496	423	429	479	649	830	846	706	759
689	890	998	939	958	975	981	829	757	836	822	898	1145	1145	1021	959	845	634	521	681	724	684	971	873	666	683	563	161	283	406	649	826	938	872	626	691
542	780	883	903	886	912	897	825	782	817	829	1068	1071	1027	985	928	744	484	487	556	438	679	991	797	670	615	343	312	589	631	563	543	543	542	392	529
573	793	972	1036	976	935	978	990	1025	970	769	757	827	971	981	933	788	531	549	531	599	882	930	875	855	673	667	721	736	885	733	679	556	581	484	382
648	721	902	1006	924	941	944	898	914	897	993	981	990	996	965	902	756	515	568	712	829	918	958	950	963	885	894	878	954	988	959	980	935	843	593	464
708	737	841	946	957	977	1030	975	993	949	965	1055	1002	1032	996	943	715	565	695	782	883	1020	991	996	1054	986	844	817	833	996	968	963	927	973	807	600
722	776	890	1016	1012	1021	1033	1023	1016	997	1021	1068	1017	1004	983	887	656	600	736	817	931	972	965	961	1006	990	998	948	985	1043	1018	1028	1003	1014	944	705
681	740	862	1003	1054	979	1011	1037	1034	1031	1053	1065	1041	1026	966	813	639	640	769	868	955	952	988	1021	1048	1045	1042	1008	1022	1049	1040	1031	1009	998	970	780
720	709	810	945	1028	1047	1042	1036	1046	1061	1069	1079	1030	1023	930	773	686	740	885	1002	1067	1063	1056	1083	1105	1091	1080	1057	1057	1056	1055	1059	1024	1025	989	846
885	831	860	945	1032	1088	1118	1129	1145	1153	1154	1138	1071	987	881	795	811	890	998	1072	1121	1125	1119	1121	1101	1107	1133	1131	1121	1101	1110	1110	1059	1089	1078	991
1112	1056	1035	1060	1084	1115	1134	1146	1160	1155	1140	1135	1110	1081	1035	995	1070	1153	1207	1236	1237	1244	1183	1217	1195	1245	1215	1224	1042	1179	1190	1113	1145	1215	1178	1165
387	374	363	359	362	370	366	367	367	359	354	362	374	373	381	380	394	407	407	408	432	431	424	435	440	428	429	408	405	420	398	428	435	426	417	400

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: HIRS8 (Surface)
NOAA16, using all observations

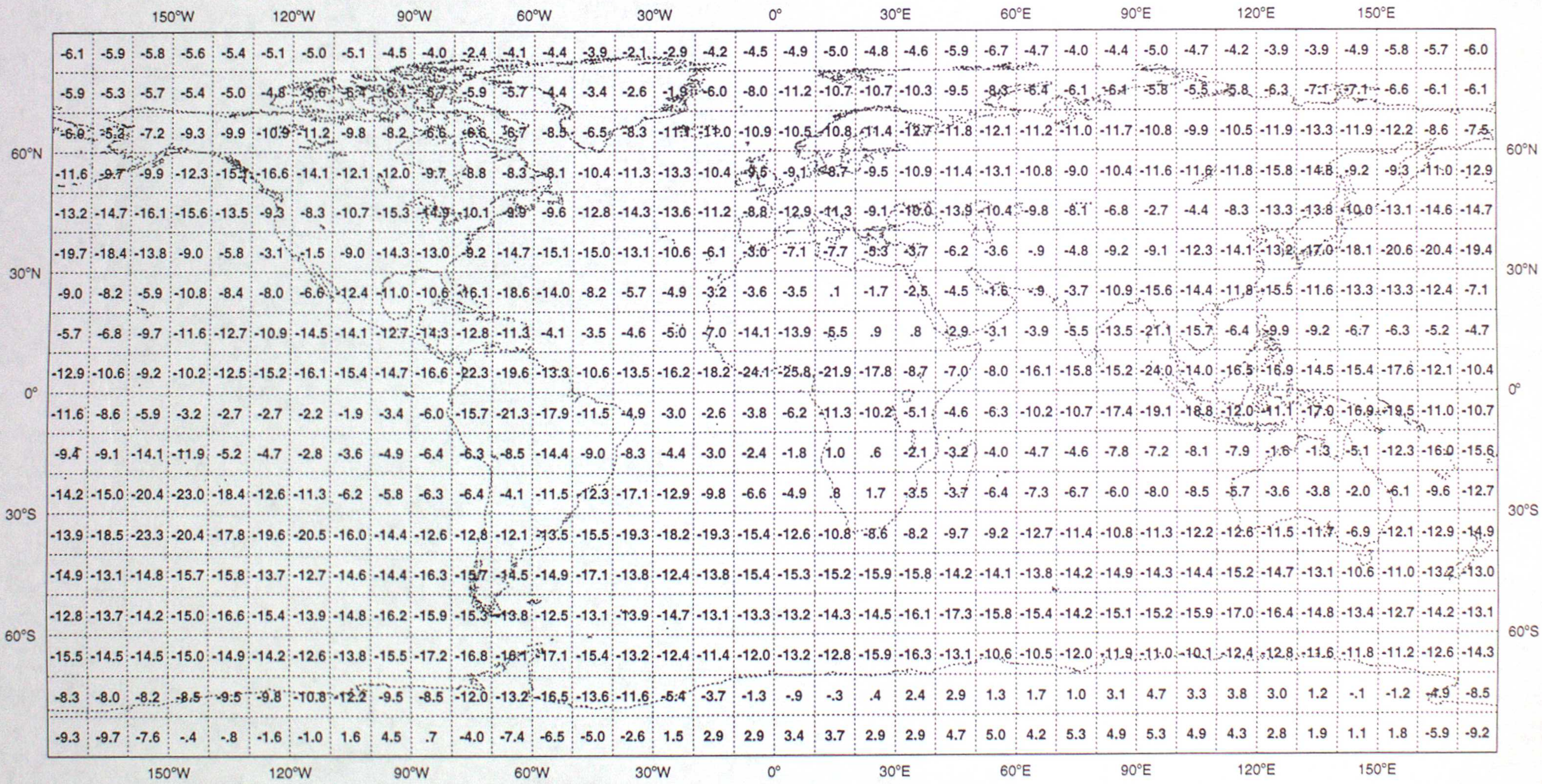


-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3
-.5	-.4	-.5	-.5	-.4	-.4	-.5	-.5	-.5	-.6	-.7	-.7	-.5	-.5	-.5	-.6	-.7	-.8	-.8	-.8	-.7	-.6	-.6	-.6	-.6	-.6	-.6	-.6	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5
-.9	-.6	-.6	-.7	-.7	-.9	-1.0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.0	-1.0	-1.1	-1.3	-1.4	-1.3	-1.3	-1.2	-1.1	-1.1	-1.0	-1.0	-1.2	-1.2	-1.2	-1.2	-.9	-.9	-1.0	-1.2	-1.3	-1.3	-1.2	-1.4
-1.3	-.9	-.8	-1.0	-1.3	-1.7	-1.8	-1.8	-1.9	-1.8	-1.8	-1.8	-1.5	-1.5	-1.6	-1.9	-1.9	-1.9	-1.9	-1.7	-1.6	-1.5	-1.5	-1.8	-1.9	-2.0	-2.0	-1.9	-1.7	-1.6	-1.6	-1.8	-1.6	-1.6	-1.7	-1.6
-2.0	-2.1	-2.3	-2.4	-2.5	-2.6	-2.8	-2.7	-2.8	-2.9	-2.3	-2.3	-2.0	-1.9	-2.0	-2.3	-2.2	-2.2	-2.5	-2.5	-2.1	-1.8	-2.1	-2.3	-2.6	-2.7	-2.5	-2.2	-2.1	-2.1	-2.0	-2.2	-2.1	-2.2	-2.6	-2.4
-3.9	-4.0	-3.5	-3.0	-2.7	-2.7	-3.0	-3.4	-3.6	-3.4	-2.9	-3.1	-3.2	-3.1	-3.0	-2.8	-2.4	-2.5	-2.6	-2.7	-2.5	-2.3	-2.7	-3.0	-2.9	-3.0	-3.4	-3.5	-3.4	-3.1	-3.1	-3.5	-3.8	-4.1	-4.1	-3.9
-3.7	-3.6	-3.0	-3.3	-3.0	-2.9	-3.2	-3.9	-3.8	-3.5	-4.0	-4.4	-3.9	-3.3	-3.0	-2.9	-3.0	-3.1	-3.0	-2.9	-2.8	-2.9	-3.0	-3.3	-3.2	-3.1	-4.0	-4.3	-3.9	-3.8	-4.3	-4.1	-4.4	-4.4	-4.0	-3.5
-3.7	-4.0	-4.1	-4.2	-4.2	-3.8	-4.5	-4.8	-4.6	-5.1	-4.9	-4.4	-3.4	-3.3	-3.2	-3.3	-3.6	-4.5	-4.9	-4.2	-3.4	-3.3	-3.4	-3.5	-3.7	-3.9	-5.2	-6.2	-5.3	-4.4	-5.1	-4.7	-4.1	-4.1	-3.7	-3.7
-4.7	-4.5	-4.1	-4.1	-4.5	-4.9	-5.0	-5.1	-5.1	-5.5	-6.2	-6.0	-4.8	-4.2	-4.5	-4.9	-5.6	-6.6	-7.1	-6.4	-5.6	-4.1	-3.8	-4.2	-5.2	-5.2	-5.6	-6.7	-5.4	-5.5	-5.5	-5.0	-5.3	-5.7	-4.5	-4.7
-4.7	-4.1	-3.6	-3.2	-3.2	-3.3	-3.2	-3.2	-3.4	-3.5	-4.7	-5.8	-5.4	-4.5	-3.6	-3.3	-3.4	-3.5	-3.9	-4.5	-4.2	-3.3	-3.2	-3.7	-4.3	-4.5	-5.6	-6.0	-6.1	-4.8	-4.5	-5.2	-5.2	-5.9	-4.5	-4.5
-4.0	-3.8	-4.2	-4.1	-3.2	-3.3	-3.1	-3.0	-3.1	-3.2	-3.6	-4.1	-4.5	-4.0	-3.6	-3.2	-3.0	-2.9	-3.1	-3.0	-3.0	-3.0	-3.1	-3.2	-3.3	-3.4	-3.8	-3.7	-3.6	-3.5	-3.4	-3.6	-3.7	-4.7	-5.0	-4.9
-3.7	-3.7	-4.5	-4.9	-4.3	-3.6	-3.8	-3.2	-2.8	-2.7	-2.9	-3.5	-3.9	-3.8	-4.1	-3.7	-3.2	-2.8	-2.9	-2.8	-2.8	-2.9	-2.8	-2.9	-3.0	-2.8	-2.8	-2.9	-2.9	-2.9	-2.8	-2.9	-2.8	-2.8	-3.2	-3.3
-2.8	-3.3	-4.0	-3.8	-3.4	-3.7	-4.1	-3.4	-3.1	-2.7	-2.8	-3.2	-3.2	-3.3	-3.6	-3.5	-3.4	-2.9	-2.7	-2.8	-3.0	-2.8	-2.7	-2.7	-2.9	-2.7	-2.6	-2.6	-2.5	-2.6	-2.6	-2.6	-2.3	-2.3	-2.6	-2.8
-2.2	-2.3	-2.8	-3.0	-3.0	-2.8	-2.6	-2.8	-2.6	-2.6	-2.7	-2.9	-2.9	-3.0	-2.7	-2.3	-2.2	-2.3	-2.3	-2.3	-2.6	-2.8	-2.6	-2.5	-2.3	-2.2	-2.1	-2.1	-2.1	-2.3	-2.4	-2.3	-2.1	-1.9	-2.2	-2.2
-2.0	-2.3	-2.4	-2.5	-2.7	-2.6	-2.4	-2.4	-2.5	-2.6	-2.6	-2.6	-2.6	-2.7	-2.8	-2.5	-2.2	-2.1	-1.9	-2.0	-2.0	-2.2	-2.4	-2.2	-1.8	-1.6	-1.4	-1.5	-1.6	-1.9	-2.0	-2.1	-2.1	-1.9	-2.1	-2.1
-2.2	-2.2	-2.3	-2.4	-2.5	-2.6	-2.5	-2.5	-2.7	-3.1	-3.3	-3.5	-3.7	-3.5	-3.1	-2.8	-2.6	-2.4	-2.2	-2.2	-2.4	-2.4	-2.3	-2.1	-1.9	-1.7	-1.6	-1.5	-1.5	-1.7	-1.8	-2.0	-2.0	-2.0	-2.1	-2.2
-2.1	-2.2	-2.4	-2.6	-2.8	-3.0	-3.2	-3.2	-3.3	-3.4	-3.8	-4.3	-4.1	-3.8	-3.4	-3.1	-3.0	-2.6	-2.1	-1.8	-1.6	-1.4	-1.1	-1.2	-1.6	-1.6	-1.2	-.9	-1.1	-1.0	-.9	-1.1	-1.3	-1.5	-1.8	-2.0
-2.3	-2.4	-2.6	-2.6	-2.7	-2.7	-2.7	-2.5	-2.4	-2.7	-2.8	-2.9	-2.8	-2.8	-2.6	-2.5	-2.3	-2.2	-2.0	-1.8	-1.6	-1.3	-1.0	-.8	-.8	-.8	-.9	-1.0	-1.1	-1.2	-1.4	-1.5	-1.7	-1.9	-2.1	-2.2

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001

Channel: HIRS8 (Surface)

NOAA16, using all observations

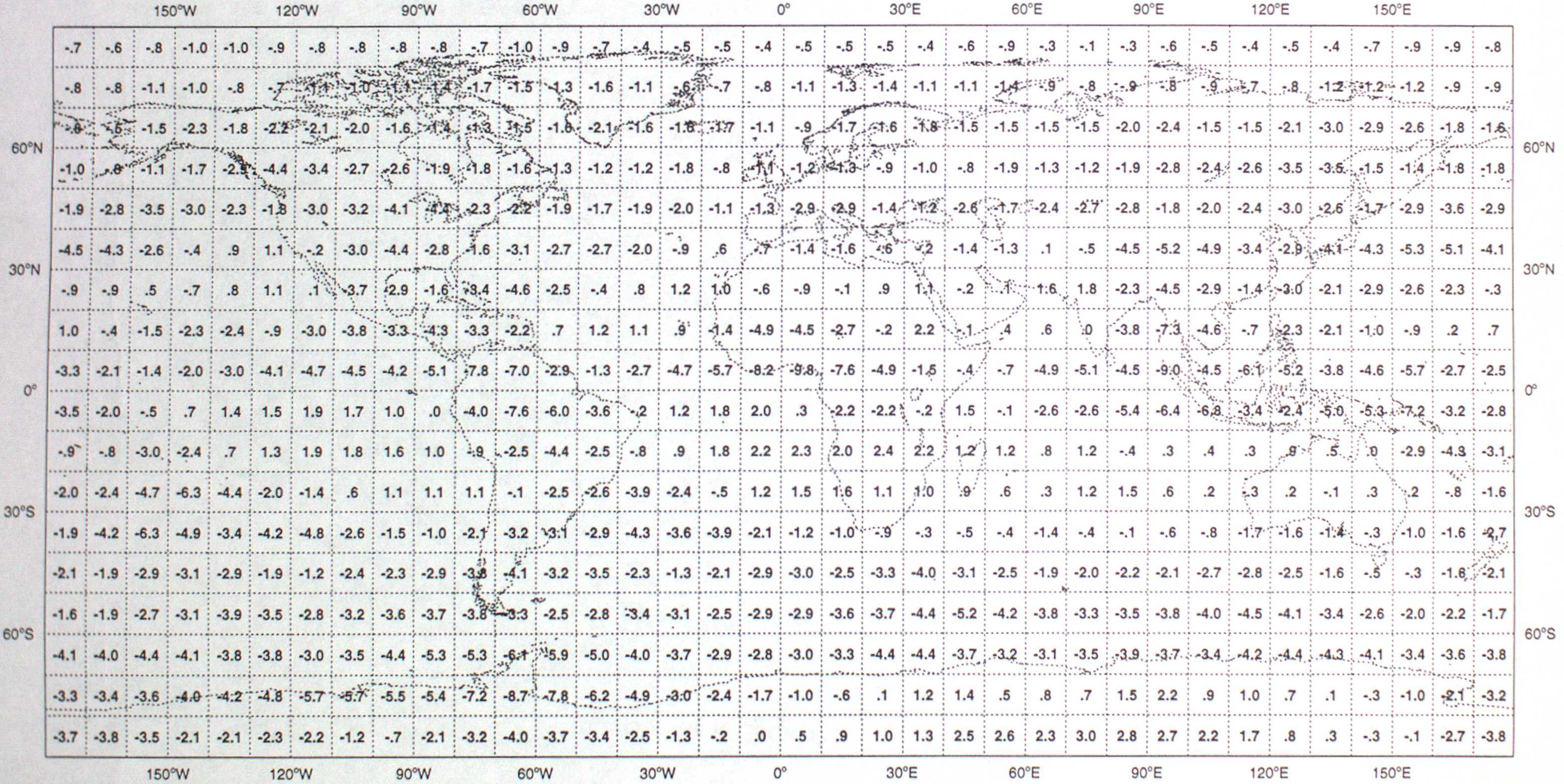


-6.1	-5.9	-5.8	-5.6	-5.4	-5.1	-5.0	-5.1	-4.5	-4.0	-2.4	-4.1	-4.4	-3.9	-2.1	-2.9	-4.2	-4.5	-4.9	-5.0	-4.8	-4.6	-5.9	-6.7	-4.7	-4.0	-4.4	-5.0	-4.7	-4.2	-3.9	-3.9	-4.9	-5.8	-5.7	-6.0
-5.9	-5.3	-5.7	-5.4	-5.0	-4.8	-5.6	-5.4	-6.1	-5.7	-5.9	-5.7	-4.4	-3.4	-2.6	-1.9	-6.0	-8.0	-11.2	-10.7	-10.7	-10.3	-9.5	-8.3	-6.4	-6.1	-6.4	-5.8	-5.5	-5.8	-6.3	-7.1	-7.1	-6.6	-6.1	-6.1
-6.9	-5.2	-7.2	-9.3	-9.9	-10.9	-11.2	-9.8	-8.2	-6.6	-6.6	-6.7	-8.5	-6.5	-8.3	-11.1	-11.0	-10.9	-10.5	-10.8	-11.4	-12.7	-11.8	-12.1	-11.2	-11.0	-11.7	-10.8	-9.9	-10.5	-11.9	-13.3	-11.9	-12.2	-8.6	-7.5
-11.6	-9.7	-9.9	-12.3	-15.1	-16.6	-14.1	-12.1	-12.0	-9.7	-8.8	-8.3	-8.1	-10.4	-11.3	-13.3	-10.4	-9.5	-9.1	-8.7	-9.5	-10.9	-11.4	-13.1	-10.8	-9.0	-10.4	-11.6	-11.6	-11.8	-15.8	-14.8	-9.2	-9.3	-11.0	-12.9
-13.2	-14.7	-16.1	-15.6	-13.5	-9.3	-8.3	-10.7	-15.3	-14.9	-10.1	-9.9	-9.6	-12.8	-14.3	-13.6	-11.2	-8.8	-12.9	-11.3	-9.1	-10.0	-13.9	-10.4	-9.8	-8.1	-6.8	-2.7	-4.4	-8.3	-13.3	-13.8	-10.0	-13.1	-14.6	-14.7
-19.7	-18.4	-13.8	-9.0	-5.8	-3.1	-1.5	-9.0	-14.3	-13.0	-9.2	-14.7	-15.1	-15.0	-13.1	-10.6	-6.1	-3.0	-7.1	-7.7	-5.3	-3.7	-6.2	-3.6	-.9	-4.8	-9.2	-9.1	-12.3	-14.1	-13.2	-17.0	-18.1	-20.6	-20.4	-19.4
-9.0	-8.2	-5.9	-10.8	-8.4	-8.0	-6.6	-12.4	-11.0	-10.6	-16.1	-18.6	-14.0	-8.2	-5.7	-4.9	-3.2	-3.6	-3.5	.1	-1.7	-2.5	-4.5	-1.6	-.9	-3.7	-10.9	-15.6	-14.4	-11.8	-15.5	-11.6	-13.3	-13.3	-12.4	-7.1
-5.7	-6.8	-9.7	-11.6	-12.7	-10.9	-14.5	-14.1	-12.7	-14.3	-12.8	-11.3	-4.1	-3.5	-4.6	-5.0	-7.0	-14.1	-13.9	-5.5	.9	.8	-2.9	-3.1	-3.9	-5.5	-13.5	-21.1	-15.7	-6.4	-9.9	-9.2	-6.7	-6.3	-5.2	-4.7
-12.9	-10.6	-9.2	-10.2	-12.5	-15.2	-16.1	-15.4	-14.7	-16.6	-22.3	-19.6	-13.3	-10.6	-13.5	-16.2	-18.2	-24.1	-25.8	-21.9	-17.8	-8.7	-7.0	-8.0	-16.1	-15.8	-15.2	-24.0	-14.0	-16.5	-16.9	-14.5	-15.4	-17.6	-12.1	-10.4
-11.6	-8.6	-5.9	-3.2	-2.7	-2.7	-2.2	-1.9	-3.4	-6.0	-15.7	-21.3	-17.9	-11.5	-4.9	-3.0	-2.6	-3.8	-6.2	-11.3	-10.2	-5.1	-4.6	-6.3	-10.2	-10.7	-17.4	-19.1	-18.8	-12.0	-11.1	-17.0	-16.9	-19.5	-11.0	-10.7
-9.4	-9.1	-14.1	-11.9	-5.2	-4.7	-2.8	-3.6	-4.9	-6.4	-6.3	-8.5	-14.4	-9.0	-8.3	-4.4	-3.0	-2.4	-1.8	1.0	.6	-2.1	-3.2	-4.0	-4.7	-4.6	-7.8	-7.2	-8.1	-7.9	-1.6	-1.3	-5.1	-12.3	-16.0	-15.6
-14.2	-15.0	-20.4	-23.0	-18.4	-12.6	-11.3	-6.2	-5.8	-6.3	-6.4	-4.1	-11.5	-12.3	-17.1	-12.9	-9.8	-6.6	-4.9	.8	1.7	-3.5	-3.7	-6.4	-7.3	-6.7	-6.0	-8.0	-8.5	-5.7	-3.6	-3.8	-2.0	-6.1	-9.6	-12.7
-13.9	-18.5	-23.3	-20.4	-17.8	-19.6	-20.5	-16.0	-14.4	-12.6	-12.8	-12.1	-13.5	-15.5	-19.3	-18.2	-19.3	-15.4	-12.6	-10.8	-8.6	-8.2	-9.7	-9.2	-12.7	-11.4	-10.8	-11.3	-12.2	-12.6	-11.5	-11.7	-6.9	-12.1	-12.9	-14.9
-14.9	-13.1	-14.8	-15.7	-15.8	-13.7	-12.7	-14.6	-14.4	-16.3	-15.7	-14.5	-14.9	-17.1	-13.8	-12.4	-13.8	-15.4	-15.3	-15.2	-15.9	-15.8	-14.2	-14.1	-13.8	-14.2	-14.9	-14.3	-14.4	-15.2	-14.7	-13.1	-10.6	-11.0	-13.2	-13.0
-12.8	-13.7	-14.2	-15.0	-16.6	-15.4	-13.9	-14.8	-16.2	-15.9	-15.3	-13.8	-12.5	-13.1	-13.9	-14.7	-13.1	-13.3	-13.2	-14.3	-14.5	-16.1	-17.3	-15.8	-15.4	-14.2	-15.1	-15.2	-15.9	-17.0	-16.4	-14.8	-13.4	-12.7	-14.2	-13.1
-15.5	-14.5	-14.5	-15.0	-14.9	-14.2	-12.6	-13.8	-15.5	-17.2	-16.8	-18.1	-17.1	-15.4	-13.2	-12.4	-11.4	-12.0	-13.2	-12.8	-15.9	-16.3	-13.1	-10.6	-10.5	-12.0	-11.9	-11.0	-10.1	-12.4	-12.8	-11.6	-11.8	-11.2	-12.6	-14.3
-8.3	-8.0	-8.2	-8.5	-9.5	-9.8	-10.8	-12.2	-9.5	-8.5	-12.0	-13.2	-16.5	-13.6	-11.6	-5.4	-3.7	-1.3	-.9	-.3	.4	2.4	2.9	1.3	1.7	1.0	3.1	4.7	3.3	3.8	3.0	1.2	-.1	-1.2	-4.9	-8.5
-9.3	-9.7	-7.6	-.4	-.8	-1.6	-1.0	1.6	4.5	.7	-4.0	-7.4	-6.5	-5.0	-2.6	1.5	2.9	2.9	3.4	3.7	2.9	2.9	4.7	5.0	4.2	5.3	4.9	5.3	4.9	4.3	2.8	1.9	1.1	1.8	-5.9	-9.2

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001

Channel: HIRS15 (700 hPa)

NOAA16, using all observations

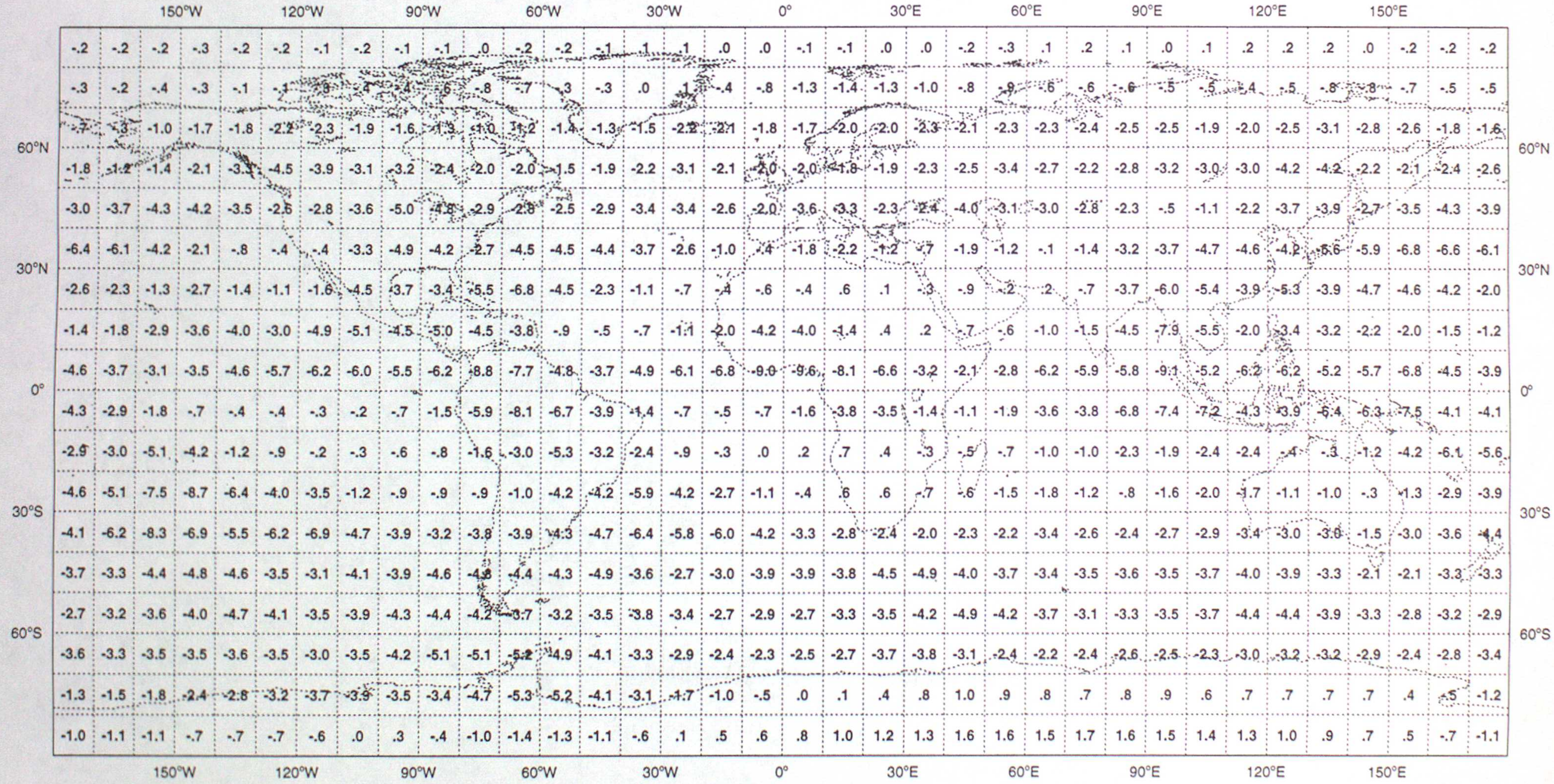


-.7	-.6	-.8	-1.0	-1.0	-.9	-.8	-.8	-.8	-.8	-.7	-1.0	-.9	-.7	-.4	-.5	-.5	-.4	-.5	-.5	-.5	-.4	-.6	-.9	-.3	-.1	-.3	-.6	-.5	-.4	-.5	-.4	-.7	-.9	-.9	-.8
-.8	-.8	-1.1	-1.0	-.8	-.7	-1.1	-1.0	-1.1	-1.4	-1.7	-1.5	-1.3	-1.6	-1.1	-.6	-.7	-.8	-1.1	-1.3	-1.4	-1.1	-1.1	-1.4	-.9	-.8	-.9	-.8	-.9	-.7	-.8	-1.2	-1.2	-1.2	-.9	-.9
-.8	-.5	-1.5	-2.3	-1.8	-2.2	-2.1	-2.0	-1.6	-1.4	-1.3	-1.5	-1.6	-2.1	-1.6	-1.8	-1.7	-1.1	-.9	-1.7	-1.6	-1.8	-1.5	-1.5	-1.5	-1.5	-2.0	-2.4	-1.5	-1.5	-2.1	-3.0	-2.9	-2.6	-1.8	-1.6
-1.0	-.8	-1.1	-1.7	-2.5	-4.4	-3.4	-2.7	-2.6	-1.9	-1.8	-1.6	-1.3	-1.2	-1.2	-1.8	-.8	-1.1	-1.2	-1.3	-.9	-1.0	-.8	-1.9	-1.3	-1.2	-1.9	-2.8	-2.4	-2.6	-3.5	-3.5	-1.5	-1.4	-1.8	-1.8
-1.9	-2.8	-3.5	-3.0	-2.3	-1.8	-3.0	-3.2	-4.1	-4.4	-2.3	-2.2	-1.9	-1.7	-1.9	-2.0	-1.1	-1.3	-2.9	-2.9	-1.4	-1.2	-2.6	-1.7	-2.4	-2.7	-2.8	-1.8	-2.0	-2.4	-3.0	-2.6	-1.7	-2.9	-3.6	-2.9
-4.5	-4.3	-2.6	-.4	.9	1.1	-.2	-3.0	-4.4	-2.8	-1.6	-3.1	-2.7	-2.7	-2.0	-.9	.6	-.7	-1.4	-1.6	.6	-.2	-1.4	-1.3	.1	-.5	-4.5	-5.2	-4.9	-3.4	-2.9	-4.1	-4.3	-5.3	-5.1	-4.1
-.9	-.9	.5	-.7	.8	1.1	.1	-3.7	-2.9	-1.6	-3.4	-4.6	-2.5	-.4	.8	1.2	1.0	-.6	-.9	-.1	.9	1.1	-.2	.1	1.6	1.8	-2.3	-4.5	-2.9	-1.4	-3.0	-2.1	-2.9	-2.6	-2.3	-.3
1.0	-.4	-1.5	-2.3	-2.4	-.9	-3.0	-3.8	-3.3	-4.3	-3.3	-2.2	.7	1.2	1.1	.9	-1.4	-4.9	-4.5	-2.7	-.2	2.2	-.1	.4	.6	.0	-3.8	-7.3	-4.6	-.7	-2.3	-2.1	-1.0	-.9	.2	.7
-3.3	-2.1	-1.4	-2.0	-3.0	-4.1	-4.7	-4.5	-4.2	-5.1	-7.8	-7.0	-2.9	-1.3	-2.7	-4.7	-5.7	-8.2	-9.8	-7.6	-4.9	-1.5	-.4	-.7	-4.9	-5.1	-4.5	-9.0	-4.5	-6.1	-5.2	-3.8	-4.6	-5.7	-2.7	-2.5
-3.5	-2.0	-.5	.7	1.4	1.5	1.9	1.7	1.0	.0	-4.0	-7.6	-6.0	-3.6	-.2	1.2	1.8	2.0	.3	-2.2	-2.2	-.2	1.5	-.1	-2.6	-2.6	-5.4	-6.4	-6.8	-3.4	-2.4	-5.0	-5.3	-7.2	-3.2	-2.8
-.9	-.8	-3.0	-2.4	.7	1.3	1.9	1.8	1.6	1.0	-.9	-2.5	-4.4	-2.5	-.8	.9	1.8	2.2	2.3	2.0	2.4	2.2	1.2	1.2	.8	1.2	-.4	.3	.4	.3	.9	.5	.0	-2.9	-4.3	-3.1
-2.0	-2.4	-4.7	-6.3	-4.4	-2.0	-1.4	.6	1.1	1.1	1.1	-.1	-2.5	-2.6	-3.9	-2.4	-.5	1.2	1.5	1.6	1.1	1.0	.9	.6	.3	1.2	1.5	.6	.2	-.3	.2	-.1	.3	.2	-.8	-1.6
-1.9	-4.2	-6.3	-4.9	-3.4	-4.2	-4.8	-2.6	-1.5	-1.0	-2.1	-3.2	-3.1	-2.9	-4.3	-3.6	-3.9	-2.1	-1.2	-1.0	-.9	-.3	-.5	-.4	-1.4	-.4	-.1	-.6	-.8	-1.7	-1.6	-1.4	-.3	-1.0	-1.6	-2.7
-2.1	-1.9	-2.9	-3.1	-2.9	-1.9	-1.2	-2.4	-2.3	-2.9	-3.8	-4.1	-3.2	-3.5	-2.3	-1.3	-2.1	-2.9	-3.0	-2.5	-3.3	-4.0	-3.1	-2.5	-1.9	-2.0	-2.2	-2.1	-2.7	-2.8	-2.5	-1.6	-.5	-.3	-1.6	-2.1
-1.6	-1.9	-2.7	-3.1	-3.9	-3.5	-2.8	-3.2	-3.6	-3.7	-3.8	-3.3	-2.5	-2.8	-3.4	-3.1	-2.5	-2.9	-2.9	-3.6	-3.7	-4.4	-5.2	-4.2	-3.8	-3.3	-3.5	-3.8	-4.0	-4.5	-4.1	-3.4	-2.6	-2.0	-2.2	-1.7
-4.1	-4.0	-4.4	-4.1	-3.8	-3.8	-3.0	-3.5	-4.4	-5.3	-5.3	-6.1	-5.9	-5.0	-4.0	-3.7	-2.9	-2.8	-3.0	-3.3	-4.4	-4.4	-3.7	-3.2	-3.1	-3.5	-3.9	-3.7	-3.4	-4.2	-4.4	-4.3	-4.1	-3.4	-3.6	-3.8
-3.3	-3.4	-3.6	-4.0	-4.2	-4.8	-5.7	-5.7	-5.5	-5.4	-7.2	-8.7	-7.8	-6.2	-4.9	-3.0	-2.4	-1.7	-1.0	-.6	.1	1.2	1.4	.5	.8	.7	1.5	2.2	.9	1.0	.7	.1	-.3	-1.0	-2.1	-3.2
-3.7	-3.8	-3.5	-2.1	-2.1	-2.3	-2.2	-1.2	-.7	-2.1	-3.2	-4.0	-3.7	-3.4	-2.5	-1.3	-.2	.0	.5	.9	1.0	1.3	2.5	2.6	2.3	3.0	2.8	2.7	2.2	1.7	.8	.3	-.3	-.1	-2.7	-3.8

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001

Channel: HIRS15 (700 hPa)

NOAA16, using all observations

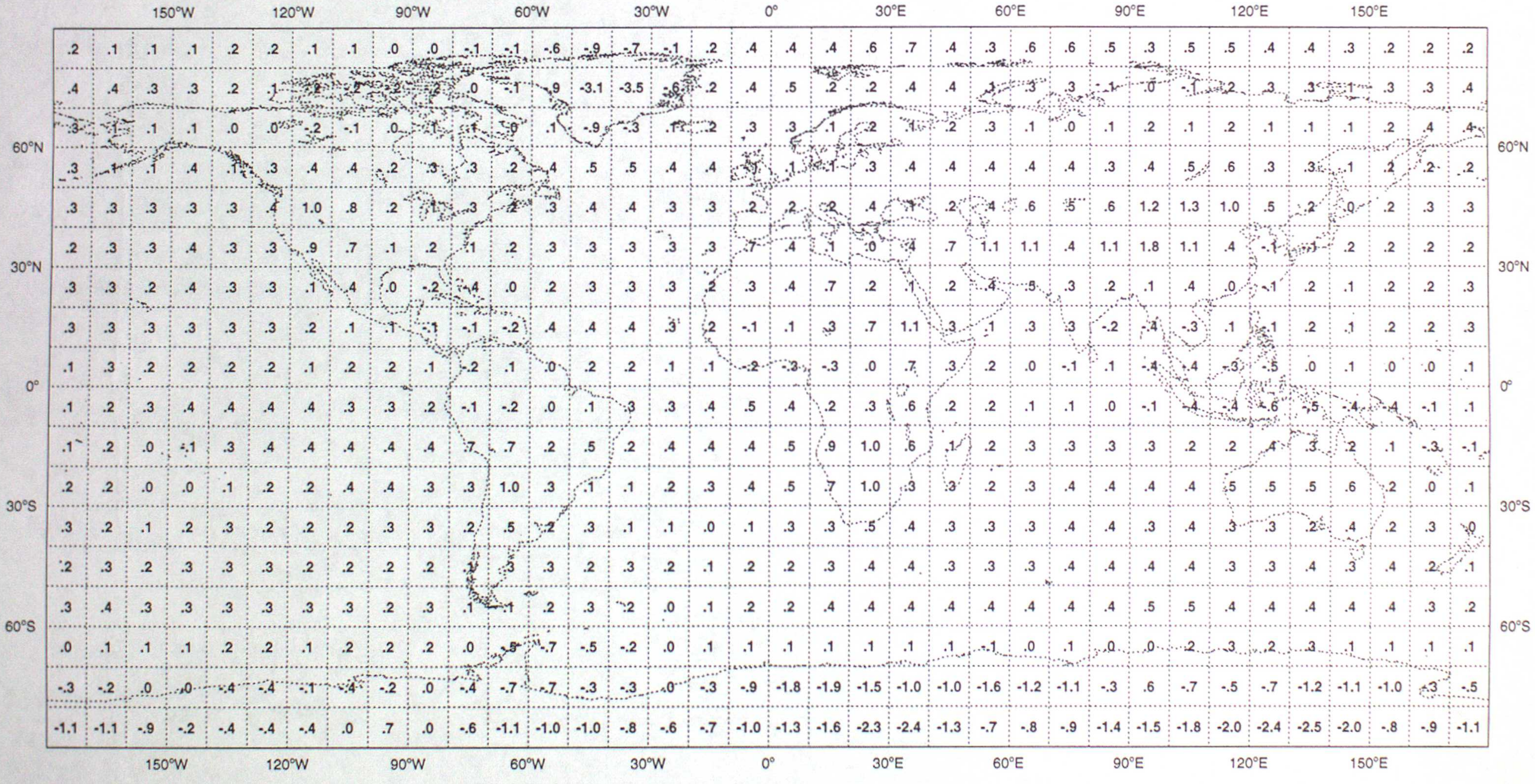


-.2	-.2	-.2	-.3	-.2	-.2	-.1	-.2	-.1	-.1	.0	-.2	-.2	-.1	.1	.1	.0	.0	-.1	-.1	.0	.0	-.2	-.3	.1	.2	.1	.0	.1	.2	.2	.2	.0	-.2	-.2	-.2
-.3	-.2	-.4	-.3	-.1	-.1	-.8	-.4	-.4	-.6	-.8	-.7	-.3	-.3	.0	.1	-.4	-.8	-1.3	-1.4	-1.3	-1.0	-.8	-.9	-.6	-.6	-.6	-.5	-.5	-.4	-.5	-.8	-.8	-.7	-.5	-.5
-.7	-.3	-1.0	-1.7	-1.8	-2.2	-2.3	-1.9	-1.6	-1.3	-1.0	-1.2	-1.4	-1.3	-1.5	-2.2	-2.1	-1.8	-1.7	-2.0	-2.0	-2.3	-2.1	-2.3	-2.3	-2.4	-2.5	-2.5	-1.9	-2.0	-2.5	-3.1	-2.8	-2.6	-1.8	-1.6
-1.8	-1.2	-1.4	-2.1	-3.3	-4.5	-3.9	-3.1	-3.2	-2.4	-2.0	-2.0	-1.5	-1.9	-2.2	-3.1	-2.1	-2.0	-2.0	-1.8	-1.9	-2.3	-2.5	-3.4	-2.7	-2.2	-2.8	-3.2	-3.0	-3.0	-4.2	-4.2	-2.2	-2.1	-2.4	-2.6
-3.0	-3.7	-4.3	-4.2	-3.5	-2.6	-2.8	-3.6	-5.0	-4.8	-2.9	-2.8	-2.5	-2.9	-3.4	-3.4	-2.6	-2.0	-3.6	-3.3	-2.3	-2.4	-4.0	-3.1	-3.0	-2.8	-2.3	-.5	-1.1	-2.2	-3.7	-3.9	-2.7	-3.5	-4.3	-3.9
-6.4	-6.1	-4.2	-2.1	-.8	-.4	-.4	-3.3	-4.9	-4.2	-2.7	-4.5	-4.5	-4.4	-3.7	-2.6	-1.0	-.4	-1.8	-2.2	-1.2	-.7	-1.9	-1.2	-.1	-1.4	-3.2	-3.7	-4.7	-4.6	-4.2	-5.6	-5.9	-6.8	-6.6	-6.1
-2.6	-2.3	-1.3	-2.7	-1.4	-1.1	-1.6	-4.5	-3.7	-3.4	-5.5	-6.8	-4.5	-2.3	-1.1	-.7	-.4	-.6	-.4	.6	.1	-.3	-.9	-.2	.2	-.7	-3.7	-6.0	-5.4	-3.9	-5.3	-3.9	-4.7	-4.6	-4.2	-2.0
-1.4	-1.8	-2.9	-3.6	-4.0	-3.0	-4.9	-5.1	-4.5	-5.0	-4.5	-3.8	-.9	-.5	-.7	-1.1	-2.0	-4.2	-4.0	-1.4	.4	.2	-.7	-.6	-1.0	-1.5	-4.5	-7.9	-5.5	-2.0	-3.4	-3.2	-2.2	-2.0	-1.5	-1.2
-4.6	-3.7	-3.1	-3.5	-4.6	-5.7	-6.2	-6.0	-5.5	-6.2	-8.8	-7.7	-4.8	-3.7	-4.9	-6.1	-6.8	-9.0	-9.6	-8.1	-6.6	-3.2	-2.1	-2.8	-6.2	-5.9	-5.8	-9.1	-5.2	-6.2	-6.2	-5.2	-5.7	-6.8	-4.5	-3.9
-4.3	-2.9	-1.8	-.7	-.4	-.4	-.3	-.2	-.7	-1.5	-5.9	-8.1	-6.7	-3.9	-1.4	-.7	-.5	-.7	-1.6	-3.8	-3.5	-1.4	-1.1	-1.9	-3.6	-3.8	-6.8	-7.4	-7.2	-4.3	-3.9	-6.4	-6.3	-7.5	-4.1	-4.1
-2.9	-3.0	-5.1	-4.2	-1.2	-.9	-.2	-.3	-.6	-.8	-1.6	-3.0	-5.3	-3.2	-2.4	-.9	-.3	.0	.2	.7	.4	-.3	-.5	-.7	-1.0	-1.0	-2.3	-1.9	-2.4	-2.4	-.4	-.3	-1.2	-4.2	-6.1	-5.6
-4.6	-5.1	-7.5	-8.7	-6.4	-4.0	-3.5	-1.2	-.9	-.9	-.9	-1.0	-4.2	-4.2	-5.9	-4.2	-2.7	-1.1	-.4	.6	.6	-.7	-.6	-1.5	-1.8	-1.2	-.8	-1.6	-2.0	-1.7	-1.1	-1.0	-.3	-1.3	-2.9	-3.9
-4.1	-6.2	-8.3	-6.9	-5.5	-6.2	-6.9	-4.7	-3.9	-3.2	-3.8	-3.9	-4.3	-4.7	-6.4	-5.8	-6.0	-4.2	-3.3	-2.8	-2.4	-2.0	-2.3	-2.2	-3.4	-2.6	-2.4	-2.7	-2.9	-3.4	-3.0	-3.0	-1.5	-3.0	-3.6	-4.4
-3.7	-3.3	-4.4	-4.8	-4.6	-3.5	-3.1	-4.1	-3.9	-4.6	-4.8	-4.4	-4.3	-4.9	-3.6	-2.7	-3.0	-3.9	-3.9	-3.8	-4.5	-4.9	-4.0	-3.7	-3.4	-3.5	-3.6	-3.5	-3.7	-4.0	-3.9	-3.3	-2.1	-2.1	-3.3	-3.3
-2.7	-3.2	-3.6	-4.0	-4.7	-4.1	-3.5	-3.9	-4.3	-4.4	-4.2	-3.7	-3.2	-3.5	-3.8	-3.4	-2.7	-2.9	-2.7	-3.3	-3.5	-4.2	-4.9	-4.2	-3.7	-3.1	-3.3	-3.5	-3.7	-4.4	-4.4	-3.9	-3.3	-2.8	-3.2	-2.9
-3.6	-3.3	-3.5	-3.5	-3.6	-3.5	-3.0	-3.5	-4.2	-5.1	-5.1	-5.2	-4.9	-4.1	-3.3	-2.9	-2.4	-2.3	-2.5	-2.7	-3.7	-3.8	-3.1	-2.4	-2.2	-2.4	-2.6	-2.5	-2.3	-3.0	-3.2	-3.2	-2.9	-2.4	-2.8	-3.4
-1.3	-1.5	-1.8	-2.4	-2.8	-3.2	-3.7	-3.9	-3.5	-3.4	-4.7	-5.3	-5.2	-4.1	-3.1	-1.7	-1.0	-.5	.0	.1	.4	.8	1.0	.9	.8	.7	.8	.9	.6	.7	.7	.7	.7	.4	-.5	-1.2
-1.0	-1.1	-1.1	-.7	-.7	-.7	-.6	.0	.3	-.4	-1.0	-1.4	-1.3	-1.1	-.6	.1	.5	.6	.8	1.0	1.2	1.3	1.6	1.6	1.5	1.7	1.6	1.5	1.4	1.3	1.0	.9	.7	.5	-.7	-1.1

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001

Channel: HIRS11 (500 - 700 hPa)

NOAA16, using all observations



.2	.1	.1	.1	.2	.2	.1	.1	.0	.0	-.1	-.1	-.6	-.9	-.7	-.1	.2	.4	.4	.4	.6	.7	.4	.3	.6	.6	.5	.3	.5	.5	.4	.4	.3	.2	.2	.2
.4	.4	.3	.3	.2	.1	.2	.2	.2	.2	.0	-.1	.9	-3.1	-3.5	-.6	.2	.4	.5	.2	.2	.4	.4	.1	.3	.3	-.1	.0	-.1	.2	.3	.3	.1	.3	.3	.4
.3	.1	.1	.1	.0	.0	-.2	-.1	.0	.1	.1	.0	.1	-.9	-.3	.1	.2	.3	.3	.1	.2	.1	.2	.3	.1	.0	.1	.2	.1	.2	.1	.1	.1	.2	.4	.4
.3	.1	.1	.4	.1	.3	.4	.4	.2	.3	.3	.2	.4	.5	.5	.4	.4	.1	.1	.1	.3	.4	.4	.4	.4	.4	.3	.4	.5	.6	.3	.3	.1	.2	.2	.2
.3	.3	.3	.3	.3	.4	1.0	.8	.2	.1	.3	.2	.3	.4	.4	.3	.3	.2	.2	.2	.4	.1	.2	.4	.6	.5	.6	1.2	1.3	1.0	.5	.2	.0	.2	.3	.3
.2	.3	.3	.4	.3	.3	.9	.7	.1	.2	.1	.2	.3	.3	.3	.3	.3	.7	.4	.1	.0	.4	.7	1.1	1.1	.4	1.1	1.8	1.1	.4	-.1	-.1	.2	.2	.2	.2
.3	.3	.2	.4	.3	.3	.1	.4	.0	-.2	-.4	.0	.2	.3	.3	.3	.2	.3	.4	.7	.2	.1	.2	.4	.5	.3	.2	.1	.4	.0	-.1	.2	.1	.2	.2	.3
.3	.3	.3	.3	.3	.3	.2	.1	.1	-.1	-.1	-.2	.4	.4	.4	.3	.2	-.1	.1	.3	.7	1.1	.3	.1	.3	.3	-.2	-.4	-.3	.1	-.1	.2	.1	.2	.2	.3
.1	.3	.2	.2	.2	.2	.1	.2	.2	.1	-.2	.1	.0	.2	.2	.1	.1	-.2	-.3	-.3	.0	.7	.3	.2	.0	-.1	.1	-.4	-.4	-.3	-.5	.0	.1	.0	.0	.1
.1	.2	.3	.4	.4	.4	.4	.3	.3	.2	-.1	-.2	.0	.1	.3	.3	.4	.5	.4	.2	.3	.6	.2	.2	.1	.1	.0	-.1	-.4	-.4	-.6	-.5	-.4	-.4	-.1	.1
.1	.2	.0	-.1	.3	.4	.4	.4	.4	.4	.7	.7	.2	.5	.2	.4	.4	.4	.5	.9	1.0	.6	.1	.2	.3	.3	.3	.3	.2	.2	.4	.3	.2	.1	-.3	-.1
.2	.2	.0	.0	.1	.2	.2	.4	.4	.3	.3	1.0	.3	.1	.1	.2	.3	.4	.5	.7	1.0	.3	.3	.2	.3	.4	.4	.4	.4	.5	.5	.5	.6	.2	.0	.1
.3	.2	.1	.2	.3	.2	.2	.2	.3	.3	.2	.5	.2	.3	.1	.1	.0	.1	.3	.3	.5	.4	.3	.3	.3	.4	.4	.3	.4	.3	.3	.2	.4	.2	.3	.0
.2	.3	.2	.3	.3	.3	.2	.2	.2	.2	.1	.3	.3	.2	.3	.2	.1	.2	.2	.3	.4	.4	.3	.3	.3	.3	.4	.4	.4	.4	.3	.3	.4	.3	.4	.2	.1
.3	.4	.3	.3	.3	.3	.3	.3	.2	.3	.1	.1	.2	.3	.2	.0	.1	.2	.2	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.3	.2
.0	.1	.1	.1	.2	.2	.1	.2	.2	.2	.0	-.5	-.7	-.5	-.2	.0	.1	.1	.1	.1	.1	.1	.1	-.1	.0	.1	.0	.0	.2	.3	.2	.3	.1	.1	.1	.1
-.3	-.2	.0	.0	-.4	-.4	-.1	-.4	-.2	.0	-.4	-.7	-.7	-.3	-.3	.0	-.3	-.9	-1.8	-1.9	-1.5	-1.0	-1.0	-1.6	-1.2	-1.1	-.3	.6	-.7	-.5	-.7	-1.2	-1.1	-1.0	-.3	-.5
-1.1	-1.1	-.9	-.2	-.4	-.4	-.4	.0	.7	.0	-.6	-1.1	-1.0	-1.0	-.8	-.6	-.7	-1.0	-1.3	-1.6	-2.3	-2.4	-1.3	-.7	-.8	-.9	-1.4	-1.5	-1.8	-2.0	-2.4	-2.5	-2.0	-.8	-.9	-1.1

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations

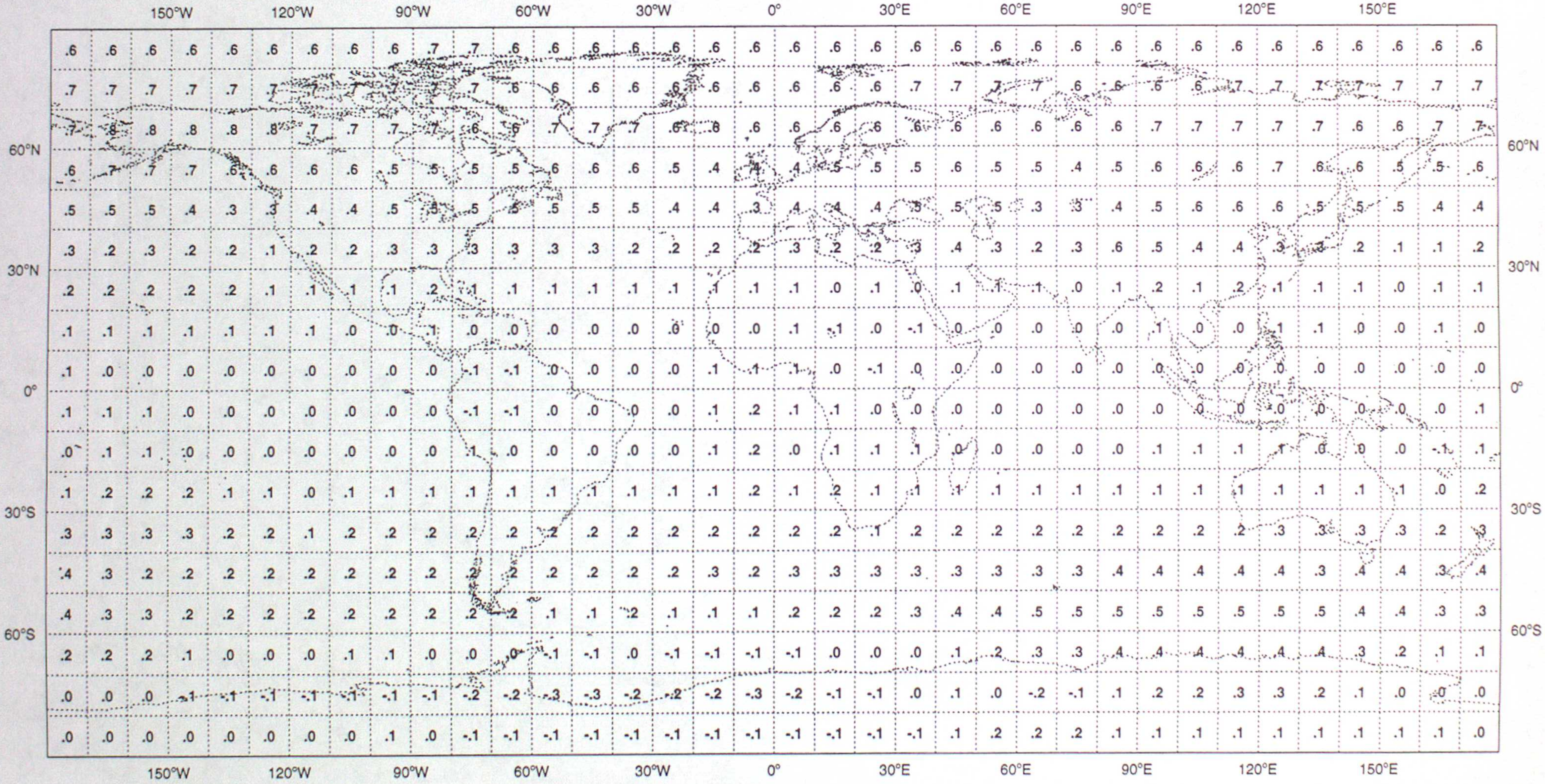

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.6 .6 .6 .6 .6 .6 .6 .6 .6 .7 .7 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6
.7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .7 .7 .7 .7 .6 .6 .6 .6 .7 .7 .7 .7 .7 .7 .7
.7 .8 .8 .8 .8 .8 .7 .7 .7 .7 .6 .6 .7 .7 .7 .6 .8 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .7 .7 .7 .7 .7 .6 .6 .7 .7
.6 .7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .6 .6 .6 .5 .4 .4 .4 .5 .5 .5 .6 .5 .5 .4 .5 .6 .6 .6 .7 .6 .6 .5 .5 .6
.5 .5 .5 .4 .3 .3 .4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .4 .3 .4 .4 .4 .5 .5 .5 .3 .3 .4 .5 .6 .6 .6 .5 .5 .5 .4 .4
.3 .2 .3 .2 .2 .1 .2 .2 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .3 .2 .2 .3 .4 .3 .2 .3 .6 .5 .4 .4 .3 .3 .2 .1 .1 .2
.2 .2 .2 .2 .2 .1 .1 .1 .1 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .1 .0 .1 .1 .1 .0 .1 .2 .1 .2 .1 .1 .1 .0 .1 .1
.1 .1 .1 .1 .1 .1 .1 .0 .0 .1 .0 .0 .0 .0 .0 .0 .0 .0 .1 -.1 .0 -.1 .0 .0 .0 .0 .0 .1 .0 .0 .1 .1 .0 .0 .1 .0
.1 .0 .0 .0 .0 .0 .0 .0 .0 .0 -.1 -.1 .0 .0 .0 .0 .1 .1 .1 .0 -.1 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0
.1 .1 .1 .0 .0 .0 .0 .0 .0 .0 -.1 -.1 .0 .0 .0 .0 .1 .2 .1 .1 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .1
.0 .1 .1 .0 .0 .0 .0 .0 .0 .0 .1 .0 .0 .0 .0 .0 .1 .2 .0 .1 .1 .1 .0 .0 .0 .0 .0 .1 .1 .1 .1 .0 .0 .0 -.1 .1
.1 .2 .2 .2 .1 .1 .0 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .2 .1 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .2
.3 .3 .3 .3 .2 .2 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .2 .3
.4 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4
.4 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .1 .2 .1 .1 .1 .2 .2 .2 .3 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .3 .3
.2 .2 .2 .1 .0 .0 .0 .1 .1 .0 .0 .0 -.1 -.1 .0 -.1 -.1 -.1 -.1 .0 .0 .0 .1 .2 .3 .3 .4 .4 .4 .4 .4 .4 .3 .2 .1 .1
.0 .0 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.3 -.3 -.2 -.2 -.2 -.3 -.2 -.1 -.1 .0 .1 .0 -.2 -.1 .1 .2 .2 .3 .3 .2 .1 .0 .0 .0
.0 .0 .0 .0 .0 .0 .0 .0 .1 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 .1 .2 .2 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: HIRS4 (400 hPa)
NOAA16, using all observations

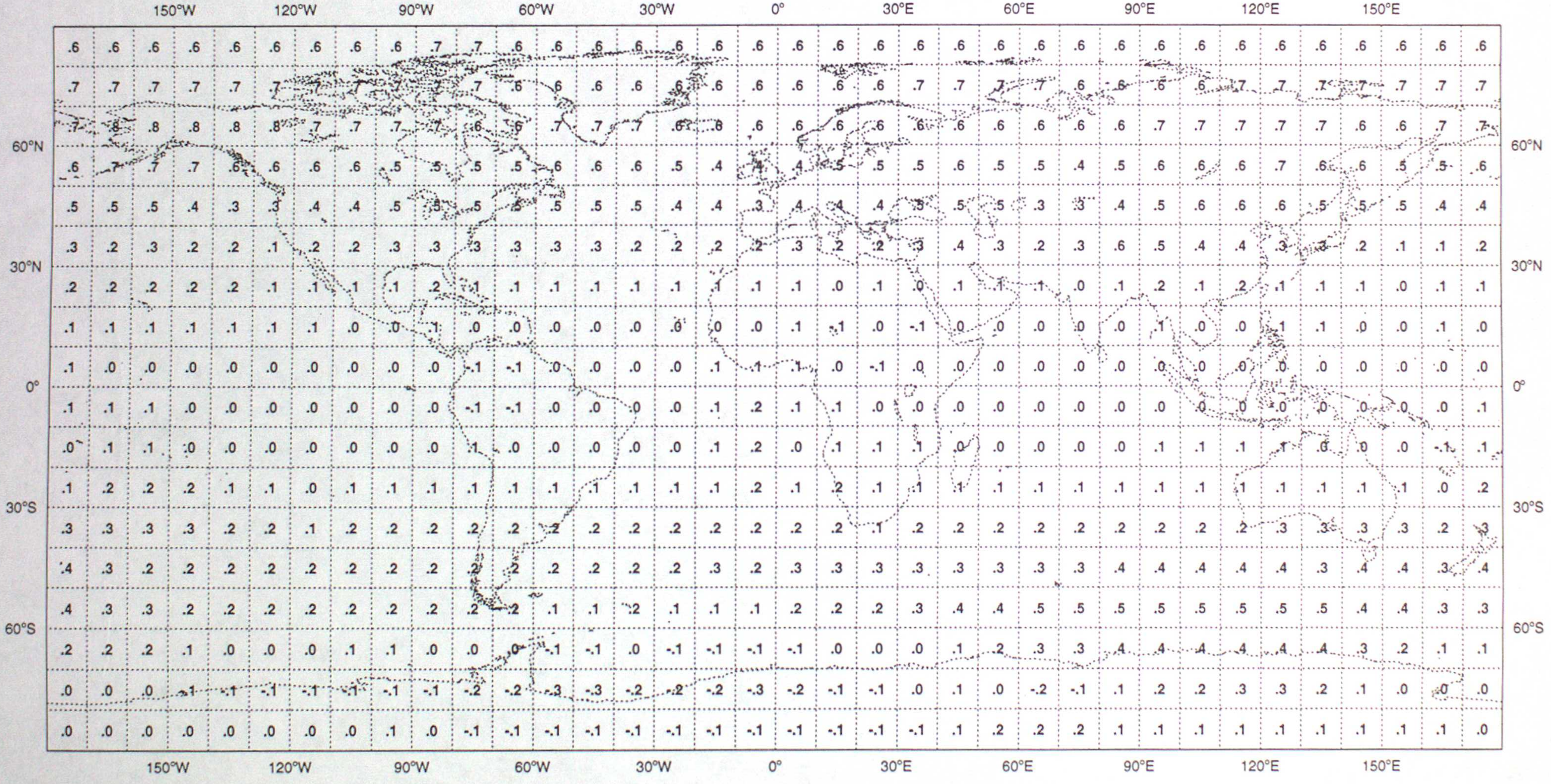
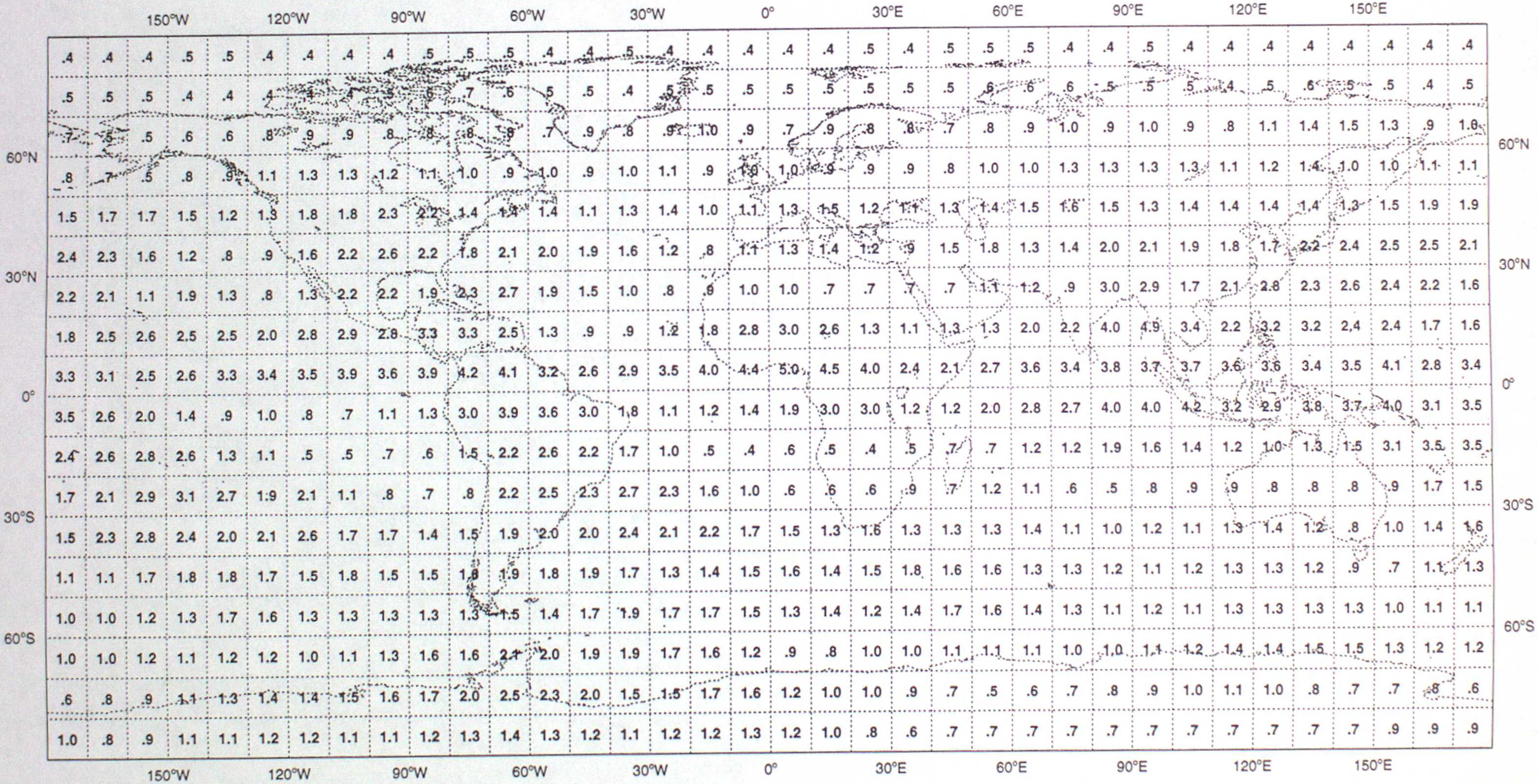

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.6 .6 .6 .6 .6 .6 .6 .6 .6 .7 .7 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6
.7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .7 .7 .7 .7 .6 .6 .6 .6 .7 .7 .7 .7 .7 .7 .7
.7 .8 .8 .8 .8 .8 .7 .7 .7 .7 .6 .6 .7 .7 .7 .6 .8 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .7 .7 .7 .7 .7 .6 .6 .7 .7
.6 .7 .7 .7 .6 .6 .6 .6 .5 .5 .5 .5 .6 .6 .6 .5 .4 .4 .4 .5 .5 .5 .6 .5 .5 .4 .5 .6 .6 .6 .7 .6 .6 .5 .5 .6
.5 .5 .5 .4 .3 .3 .4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .4 .3 .4 .4 .4 .5 .5 .5 .3 .3 .4 .5 .6 .6 .6 .5 .5 .5 .4 .4
.3 .2 .3 .2 .2 .1 .2 .2 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .3 .2 .2 .3 .4 .3 .2 .3 .6 .5 .4 .4 .3 .3 .2 .1 .1 .2
.2 .2 .2 .2 .2 .1 .1 .1 .1 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .1 .0 .1 .1 .1 .0 .1 .2 .1 .2 .1 .1 .1 .0 .1 .1
.1 .1 .1 .1 .1 .1 .1 .0 .0 .1 .0 .0 .0 .0 .0 .0 .0 .0 .1 -.1 .0 -.1 .0 .0 .0 .0 .0 .1 .0 .0 .1 .1 .0 .0 .1 .0
.1 .0 .0 .0 .0 .0 .0 .0 .0 .0 -.1 -.1 .0 .0 .0 .0 .1 .1 .1 .0 -.1 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0
.1 .1 .1 .0 .0 .0 .0 .0 .0 .0 -.1 -.1 .0 .0 .0 .0 .1 .2 .1 .1 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .1
.0 .1 .1 .0 .0 .0 .0 .0 .0 .0 .1 .0 .0 .0 .0 .0 .1 .2 .0 .1 .1 .1 .0 .0 .0 .0 .0 .1 .1 .1 .1 .0 .0 .0 -.1 .1
.1 .2 .2 .2 .1 .1 .0 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .2 .1 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 .2
.3 .3 .3 .3 .2 .2 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .2 .3
.4 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4
.4 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .1 .2 .1 .1 .1 .2 .2 .2 .3 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .3 .3
.2 .2 .2 .1 .0 .0 .0 .1 .1 .0 .0 .0 -.1 -.1 .0 -.1 -.1 -.1 -.1 .0 .0 .0 .1 .2 .3 .3 .4 .4 .4 .4 .4 .4 .3 .2 .1 .1
.0 .0 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.3 -.3 -.2 -.2 -.2 -.3 -.2 -.1 -.1 .0 .1 .0 -.2 -.1 .1 .2 .2 .3 .3 .2 .1 .0 .0 .0
.0 .0 .0 .0 .0 .0 .0 .0 .1 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 .1 .2 .2 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001

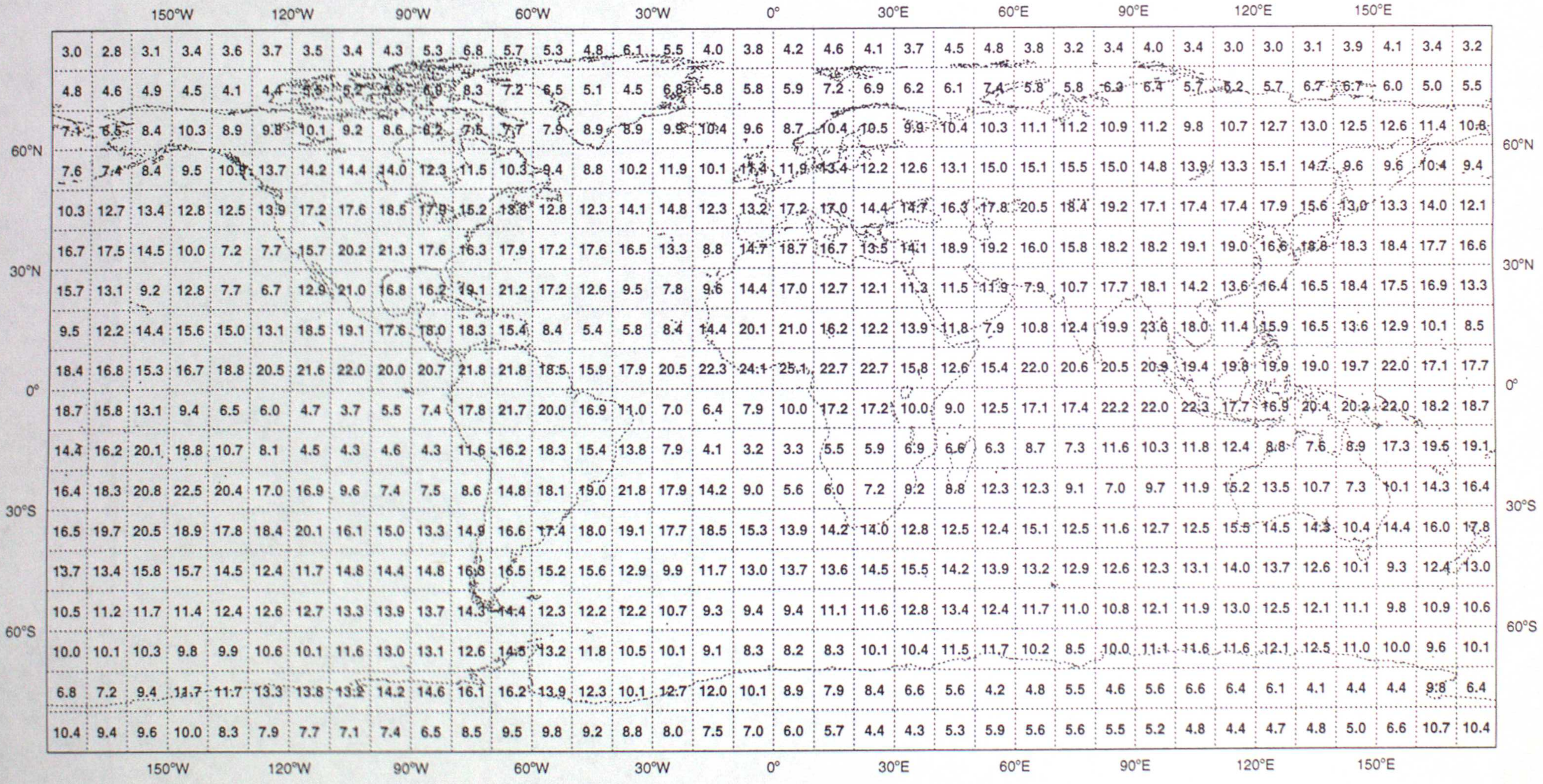
Channel: HIRS4 (400 hPa)

NOAA16, using all observations



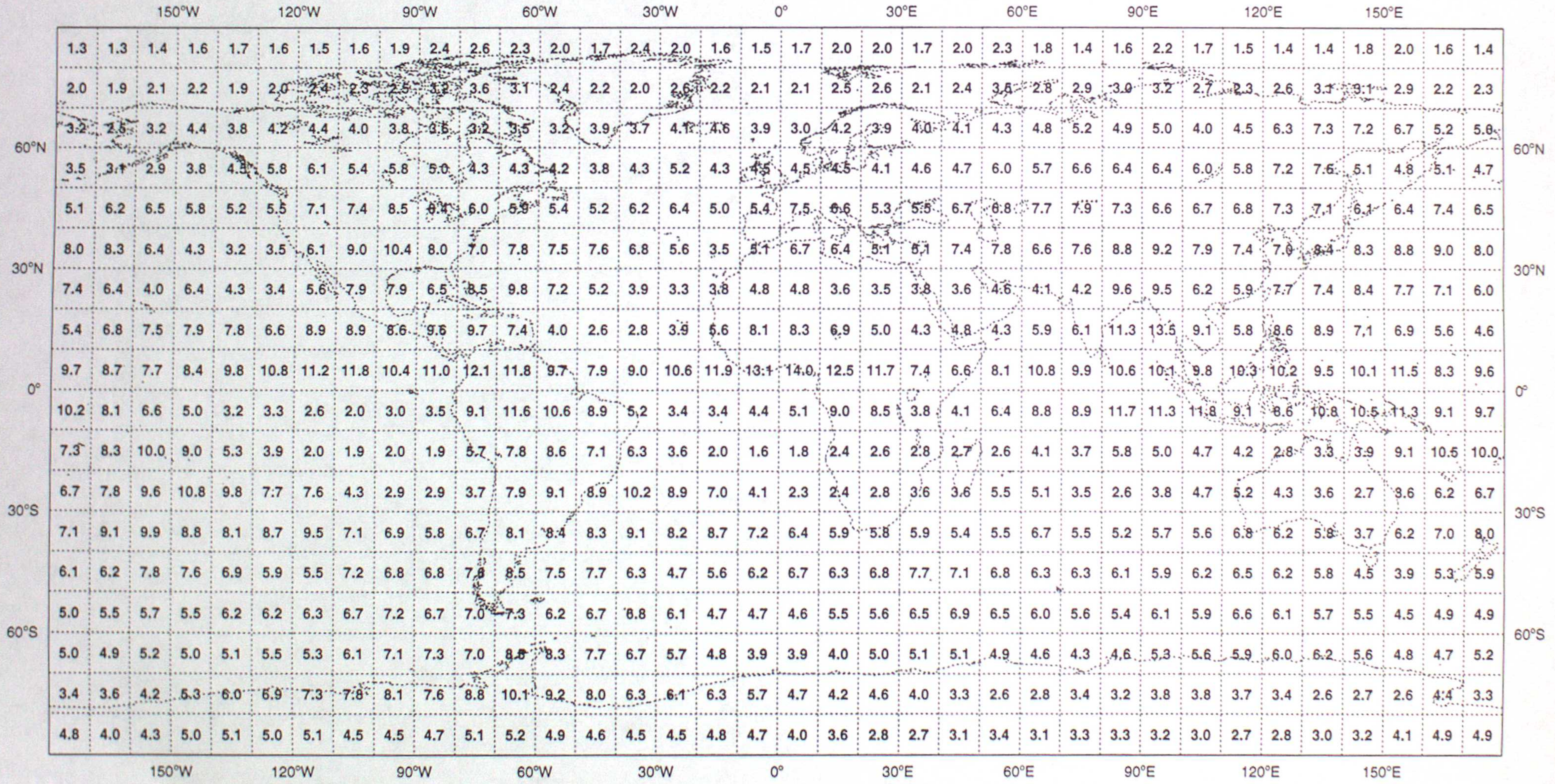
.4	.4	.4	.5	.5	.4	.4	.4	.4	.5	.5	.5	.4	.4	.5	.4	.4	.4	.4	.4	.5	.4	.5	.5	.5	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.4	.4	.4	.4	.4	.5	.6	.7	.6	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.5	.5	.4	.5	.6	.5	.5	.4	.5
.7	.5	.5	.6	.6	.8	.9	.9	.8	.8	.8	.8	.7	.9	.8	.9	1.0	.9	.7	.9	.8	.8	.7	.8	.9	1.0	.9	1.0	.9	.8	1.1	1.4	1.5	1.3	.9	1.0
.8	.7	.5	.8	.9	1.1	1.3	1.3	1.2	1.1	1.0	.9	1.0	.9	1.0	1.1	.9	1.0	1.0	.9	.9	.9	.8	1.0	1.0	1.3	1.3	1.3	1.3	1.1	1.2	1.4	1.0	1.0	1.1	1.1
1.5	1.7	1.7	1.5	1.2	1.3	1.8	1.8	2.3	2.2	1.4	1.4	1.4	1.1	1.3	1.4	1.0	1.1	1.3	1.5	1.2	1.1	1.3	1.4	1.5	1.6	1.5	1.3	1.4	1.4	1.4	1.4	1.3	1.5	1.9	1.9
2.4	2.3	1.6	1.2	.8	.9	1.6	2.2	2.6	2.2	1.8	2.1	2.0	1.9	1.6	1.2	.8	1.1	1.3	1.4	1.2	.9	1.5	1.8	1.3	1.4	2.0	2.1	1.9	1.8	1.7	2.2	2.4	2.5	2.5	2.1
2.2	2.1	1.1	1.9	1.3	.8	1.3	2.2	2.2	1.9	2.3	2.7	1.9	1.5	1.0	.8	.9	1.0	1.0	.7	.7	.7	.7	1.1	1.2	.9	3.0	2.9	1.7	2.1	2.8	2.3	2.6	2.4	2.2	1.6
1.8	2.5	2.6	2.5	2.5	2.0	2.8	2.9	2.8	3.3	3.3	2.5	1.3	.9	.9	1.2	1.8	2.8	3.0	2.6	1.3	1.1	1.3	1.3	2.0	2.2	4.0	4.9	3.4	2.2	3.2	3.2	2.4	2.4	1.7	1.6
3.3	3.1	2.5	2.6	3.3	3.4	3.5	3.9	3.6	3.9	4.2	4.1	3.2	2.6	2.9	3.5	4.0	4.4	5.0	4.5	4.0	2.4	2.1	2.7	3.6	3.4	3.8	3.7	3.7	3.6	3.6	3.4	3.5	4.1	2.8	3.4
3.5	2.6	2.0	1.4	.9	1.0	.8	.7	1.1	1.3	3.0	3.9	3.6	3.0	1.8	1.1	1.2	1.4	1.9	3.0	3.0	1.2	1.2	2.0	2.8	2.7	4.0	4.0	4.2	3.2	2.9	3.8	3.7	4.0	3.1	3.5
2.4	2.6	2.8	2.6	1.3	1.1	.5	.5	.7	.6	1.5	2.2	2.6	2.2	1.7	1.0	.5	.4	.6	.5	.4	.5	.7	.7	1.2	1.2	1.9	1.6	1.4	1.2	1.0	1.3	1.5	3.1	3.5	3.5
1.7	2.1	2.9	3.1	2.7	1.9	2.1	1.1	.8	.7	.8	2.2	2.5	2.3	2.7	2.3	1.6	1.0	.6	.6	.6	.9	.7	1.2	1.1	.6	.5	.8	.9	.9	.8	.8	.8	.9	1.7	1.5
1.5	2.3	2.8	2.4	2.0	2.1	2.6	1.7	1.7	1.4	1.5	1.9	2.0	2.0	2.4	2.1	2.2	1.7	1.5	1.3	1.6	1.3	1.3	1.3	1.4	1.1	1.0	1.2	1.1	1.3	1.4	1.2	.8	1.0	1.4	1.6
1.1	1.1	1.7	1.8	1.8	1.7	1.5	1.8	1.5	1.5	1.8	1.9	1.8	1.9	1.7	1.3	1.4	1.5	1.6	1.4	1.5	1.8	1.6	1.6	1.3	1.3	1.2	1.1	1.2	1.3	1.3	1.2	.9	.7	1.1	1.3
1.0	1.0	1.2	1.3	1.7	1.6	1.3	1.3	1.3	1.3	1.3	1.5	1.4	1.7	1.9	1.7	1.7	1.5	1.3	1.4	1.2	1.4	1.7	1.6	1.4	1.3	1.1	1.2	1.1	1.3	1.3	1.3	1.3	1.0	1.1	1.1
1.0	1.0	1.2	1.1	1.2	1.2	1.0	1.1	1.3	1.6	1.6	2.1	2.0	1.9	1.9	1.7	1.6	1.2	.9	.8	1.0	1.0	1.1	1.1	1.1	1.0	1.0	1.1	1.2	1.4	1.4	1.5	1.5	1.3	1.2	1.2
.6	.8	.9	1.1	1.3	1.4	1.4	1.5	1.6	1.7	2.0	2.5	2.3	2.0	1.5	1.5	1.7	1.6	1.2	1.0	1.0	.9	.7	.5	.6	.7	.8	.9	1.0	1.1	1.0	.8	.7	.7	.8	.6
1.0	.8	.9	1.1	1.1	1.2	1.2	1.1	1.1	1.2	1.3	1.4	1.3	1.2	1.1	1.2	1.2	1.3	1.2	1.0	.8	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.9	.9	.9

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



3.0	2.8	3.1	3.4	3.6	3.7	3.5	3.4	4.3	5.3	6.8	5.7	5.3	4.8	6.1	5.5	4.0	3.8	4.2	4.6	4.1	3.7	4.5	4.8	3.8	3.2	3.4	4.0	3.4	3.0	3.0	3.1	3.9	4.1	3.4	3.2
4.8	4.6	4.9	4.5	4.1	4.4	5.5	5.2	5.9	6.9	8.3	7.2	6.5	5.1	4.5	6.8	5.8	5.8	5.9	7.2	6.9	6.2	6.1	7.4	5.8	5.8	6.3	6.4	5.7	5.2	5.7	6.7	6.7	6.0	5.0	5.5
7.1	6.5	8.4	10.3	8.9	9.8	10.1	9.2	8.6	8.2	7.5	7.7	7.9	8.9	8.9	9.9	10.4	9.6	8.7	10.4	10.5	9.9	10.4	10.3	11.1	11.2	10.9	11.2	9.8	10.7	12.7	13.0	12.5	12.6	11.4	10.8
7.6	7.4	8.4	9.5	10.9	13.7	14.2	14.4	14.0	12.3	11.5	10.3	9.4	8.8	10.2	11.9	10.1	11.4	11.9	13.4	12.2	12.6	13.1	15.0	15.1	15.5	15.0	14.8	13.9	13.3	15.1	14.7	9.6	9.6	10.4	9.4
10.3	12.7	13.4	12.8	12.5	13.9	17.2	17.6	18.5	17.9	15.2	18.8	12.8	12.3	14.1	14.8	12.3	13.2	17.2	17.0	14.4	14.7	16.3	17.8	20.5	18.4	19.2	17.1	17.4	17.4	17.9	15.6	13.0	13.3	14.0	12.1
16.7	17.5	14.5	10.0	7.2	7.7	15.7	20.2	21.3	17.6	16.3	17.9	17.2	17.6	16.5	13.3	8.8	14.7	18.7	16.7	13.5	14.1	18.9	19.2	16.0	15.8	18.2	18.2	19.1	19.0	16.6	18.8	18.3	18.4	17.7	16.6
15.7	13.1	9.2	12.8	7.7	6.7	12.9	21.0	16.8	16.2	19.1	21.2	17.2	12.6	9.5	7.8	9.6	14.4	17.0	12.7	12.1	11.3	11.5	11.9	7.9	10.7	17.7	18.1	14.2	13.6	16.4	16.5	18.4	17.5	16.9	13.3
9.5	12.2	14.4	15.6	15.0	13.1	18.5	19.1	17.6	18.0	18.3	15.4	8.4	5.4	5.8	8.4	14.4	20.1	21.0	16.2	12.2	13.9	11.8	7.9	10.8	12.4	19.9	23.6	18.0	11.4	15.9	16.5	13.6	12.9	10.1	8.5
18.4	16.8	15.3	16.7	18.8	20.5	21.6	22.0	20.0	20.7	21.8	21.8	18.5	15.9	17.9	20.5	22.3	24.1	25.1	22.7	22.7	15.8	12.6	15.4	22.0	20.6	20.5	20.9	19.4	19.8	19.9	19.0	19.7	22.0	17.1	17.7
18.7	15.8	13.1	9.4	6.5	6.0	4.7	3.7	5.5	7.4	17.8	21.7	20.0	16.9	11.0	7.0	6.4	7.9	10.0	17.2	17.2	10.0	9.0	12.5	17.1	17.4	22.2	22.0	22.3	17.7	16.9	20.4	20.2	22.0	18.2	18.7
14.4	16.2	20.1	18.8	10.7	8.1	4.5	4.3	4.6	4.3	11.6	16.2	18.3	15.4	13.8	7.9	4.1	3.2	3.3	5.5	5.9	6.9	6.6	6.3	8.7	7.3	11.6	10.3	11.8	12.4	8.8	7.6	8.9	17.3	19.5	19.1
16.4	18.3	20.8	22.5	20.4	17.0	16.9	9.6	7.4	7.5	8.6	14.8	18.1	19.0	21.8	17.9	14.2	9.0	5.6	6.0	7.2	9.2	8.8	12.3	12.3	9.1	7.0	9.7	11.9	15.2	13.5	10.7	7.3	10.1	14.3	16.4
16.5	19.7	20.5	18.9	17.8	18.4	20.1	16.1	15.0	13.3	14.9	16.6	17.4	18.0	19.1	17.7	18.5	15.3	13.9	14.2	14.0	12.8	12.5	12.4	15.1	12.5	11.6	12.7	12.5	15.5	14.5	14.3	10.4	14.4	16.0	17.8
13.7	13.4	15.8	15.7	14.5	12.4	11.7	14.8	14.4	14.8	16.8	16.5	15.2	15.6	12.9	9.9	11.7	13.0	13.7	13.6	14.5	15.5	14.2	13.9	13.2	12.9	12.6	12.3	13.1	14.0	13.7	12.6	10.1	9.3	12.4	13.0
10.5	11.2	11.7	11.4	12.4	12.6	12.7	13.3	13.9	13.7	14.3	14.4	12.3	12.2	12.2	10.7	9.3	9.4	9.4	11.1	11.6	12.8	13.4	12.4	11.7	11.0	10.8	12.1	11.9	13.0	12.5	12.1	11.1	9.8	10.9	10.6
10.0	10.1	10.3	9.8	9.9	10.6	10.1	11.6	13.0	13.1	12.6	14.5	13.2	11.8	10.5	10.1	9.1	8.3	8.2	8.3	10.1	10.4	11.5	11.7	10.2	8.5	10.0	11.1	11.6	11.6	12.1	12.5	11.0	10.0	9.6	10.1
6.8	7.2	9.4	11.7	11.7	13.3	13.8	13.2	14.2	14.6	16.1	16.2	13.9	12.3	10.1	12.7	12.0	10.1	8.9	7.9	8.4	6.6	5.6	4.2	4.8	5.5	4.6	5.6	6.6	6.4	6.1	4.1	4.4	4.4	9.8	6.4
10.4	9.4	9.6	10.0	8.3	7.9	7.7	7.1	7.4	6.5	8.5	9.5	9.8	9.2	8.8	8.0	7.5	7.0	6.0	5.7	4.4	4.3	5.3	5.9	5.6	5.6	5.5	5.2	4.8	4.4	4.7	4.8	5.0	6.6	10.7	10.4

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations

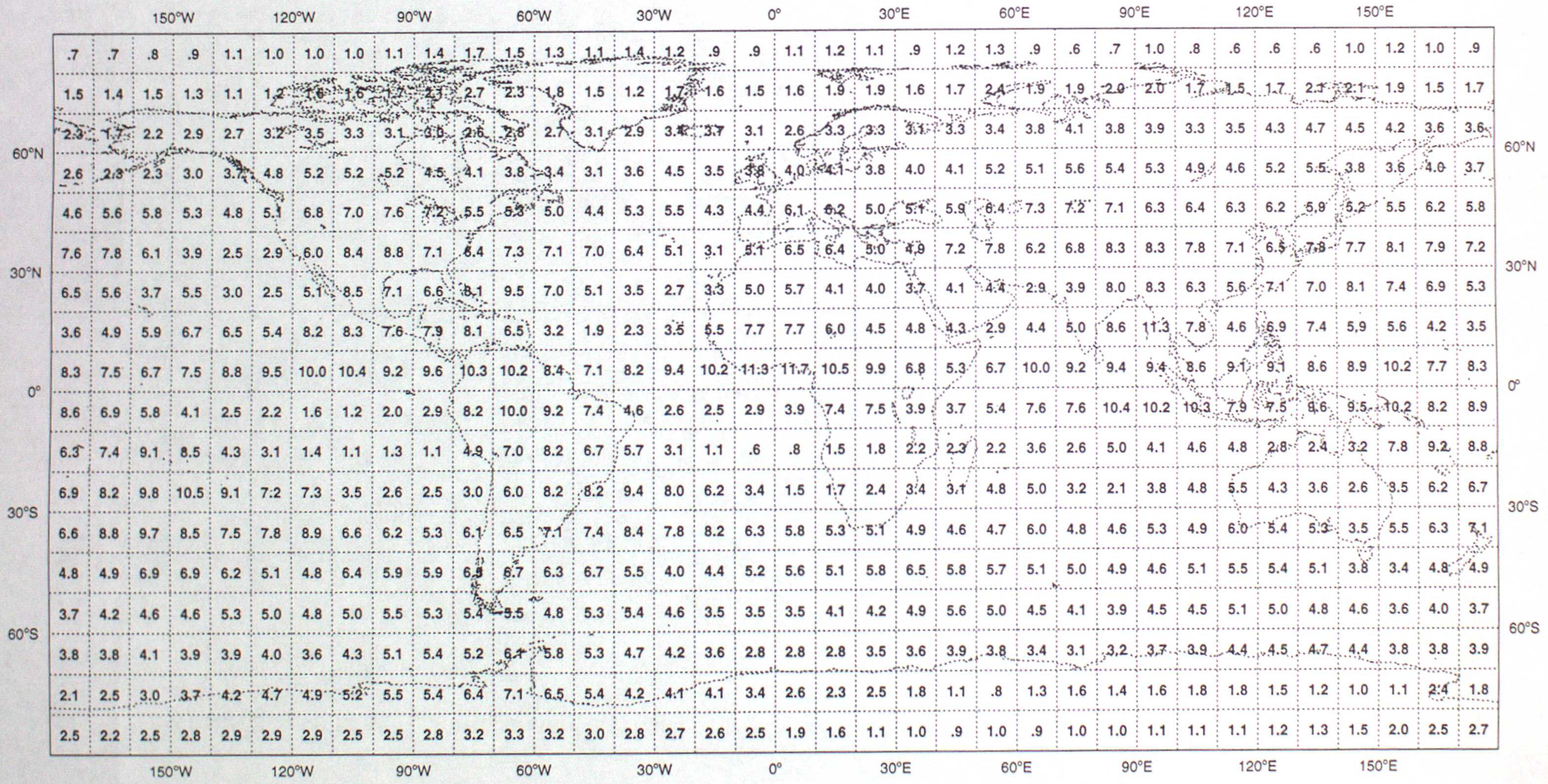


1.3	1.3	1.4	1.6	1.7	1.6	1.5	1.6	1.9	2.4	2.6	2.3	2.0	1.7	2.4	2.0	1.6	1.5	1.7	2.0	2.0	1.7	2.0	2.3	1.8	1.4	1.6	2.2	1.7	1.5	1.4	1.4	1.8	2.0	1.6	1.4
2.0	1.9	2.1	2.2	1.9	2.0	2.4	2.3	2.5	3.2	3.6	3.1	2.4	2.2	2.0	2.6	2.2	2.1	2.1	2.5	2.6	2.1	2.4	3.6	2.8	2.9	3.0	3.2	2.7	2.3	2.6	3.1	3.1	2.9	2.2	2.3
3.2	2.5	3.2	4.4	3.8	4.2	4.4	4.0	3.8	3.6	3.2	3.5	3.2	3.9	3.7	4.1	4.6	3.9	3.0	4.2	3.9	4.0	4.1	4.3	4.8	5.2	4.9	5.0	4.0	4.5	6.3	7.3	7.2	6.7	5.2	5.8
3.5	3.1	2.9	3.8	4.3	5.8	6.1	5.4	5.8	5.0	4.3	4.3	4.2	3.8	4.3	5.2	4.3	4.5	4.5	4.5	4.1	4.6	4.7	6.0	5.7	6.6	6.4	6.4	6.0	5.8	7.2	7.6	5.1	4.8	5.1	4.7
5.1	6.2	6.5	5.8	5.2	5.5	7.1	7.4	8.5	8.4	6.0	5.9	5.4	5.2	6.2	6.4	5.0	5.4	7.5	6.6	5.3	5.5	6.7	6.8	7.7	7.9	7.3	6.6	6.7	6.8	7.3	7.1	6.1	6.4	7.4	6.5
8.0	8.3	6.4	4.3	3.2	3.5	6.1	9.0	10.4	8.0	7.0	7.8	7.5	7.6	6.8	5.6	3.5	5.1	6.7	6.4	5.1	5.1	7.4	7.8	6.6	7.6	8.8	9.2	7.9	7.4	7.0	8.4	8.3	8.8	9.0	8.0
7.4	6.4	4.0	6.4	4.3	3.4	5.6	7.9	7.9	6.5	8.5	9.8	7.2	5.2	3.9	3.3	3.8	4.8	4.8	3.6	3.5	3.8	3.6	4.6	4.1	4.2	9.6	9.5	6.2	5.9	7.7	7.4	8.4	7.7	7.1	6.0
5.4	6.8	7.5	7.9	7.8	6.6	8.9	8.9	8.6	9.6	9.7	7.4	4.0	2.6	2.8	3.9	5.6	8.1	8.3	6.9	5.0	4.3	4.8	4.3	5.9	6.1	11.3	13.5	9.1	5.8	8.6	8.9	7.1	6.9	5.6	4.6
9.7	8.7	7.7	8.4	9.8	10.8	11.2	11.8	10.4	11.0	12.1	11.8	9.7	7.9	9.0	10.6	11.9	13.1	14.0	12.5	11.7	7.4	6.6	8.1	10.8	9.9	10.6	10.1	9.8	10.3	10.2	9.5	10.1	11.5	8.3	9.6
10.2	8.1	6.6	5.0	3.2	3.3	2.6	2.0	3.0	3.5	9.1	11.6	10.6	8.9	5.2	3.4	3.4	4.4	5.1	9.0	8.5	3.8	4.1	6.4	8.8	8.9	11.7	11.3	11.8	9.1	8.6	10.8	10.5	11.3	9.1	9.7
7.3	8.3	10.0	9.0	5.3	3.9	2.0	1.9	2.0	1.9	5.7	7.8	8.6	7.1	6.3	3.6	2.0	1.6	1.8	2.4	2.6	2.8	2.7	2.6	4.1	3.7	5.8	5.0	4.7	4.2	2.8	3.3	3.9	9.1	10.5	10.0
6.7	7.8	9.6	10.8	9.8	7.7	7.6	4.3	2.9	2.9	3.7	7.9	9.1	8.9	10.2	8.9	7.0	4.1	2.3	2.4	2.8	3.6	3.6	5.5	5.1	3.5	2.6	3.8	4.7	5.2	4.3	3.6	2.7	3.6	6.2	6.7
7.1	9.1	9.9	8.8	8.1	8.7	9.5	7.1	6.9	5.8	6.7	8.1	8.4	8.3	9.1	8.2	8.7	7.2	6.4	5.9	5.8	5.9	5.4	5.5	6.7	5.5	5.2	5.7	5.6	6.8	6.2	5.8	3.7	6.2	7.0	8.0
6.1	6.2	7.8	7.6	6.9	5.9	5.5	7.2	6.8	6.8	7.8	8.5	7.5	7.7	6.3	4.7	5.6	6.2	6.7	6.3	6.8	7.7	7.1	6.8	6.3	6.3	6.1	5.9	6.2	6.5	6.2	5.8	4.5	3.9	5.3	5.9
5.0	5.5	5.7	5.5	6.2	6.2	6.3	6.7	7.2	6.7	7.0	7.3	6.2	6.7	6.8	6.1	4.7	4.7	4.6	5.5	5.6	6.5	6.9	6.5	6.0	5.6	5.4	6.1	5.9	6.6	6.1	5.7	5.5	4.5	4.9	4.9
5.0	4.9	5.2	5.0	5.1	5.5	5.3	6.1	7.1	7.3	7.0	8.8	8.3	7.7	6.7	5.7	4.8	3.9	3.9	4.0	5.0	5.1	5.1	4.9	4.6	4.3	4.6	5.3	5.6	5.9	6.0	6.2	5.6	4.8	4.7	5.2
3.4	3.6	4.2	5.3	6.0	6.9	7.3	7.8	8.1	7.6	8.8	10.1	9.2	8.0	6.3	6.1	6.3	5.7	4.7	4.2	4.6	4.0	3.3	2.6	2.8	3.4	3.2	3.8	3.8	3.7	3.4	2.6	2.7	2.6	4.4	3.3
4.8	4.0	4.3	5.0	5.1	5.0	5.1	4.5	4.5	4.7	5.1	5.2	4.9	4.6	4.5	4.5	4.8	4.7	4.0	3.6	2.8	2.7	3.1	3.4	3.1	3.3	3.3	3.2	3.0	2.7	2.8	3.0	3.2	4.1	4.9	4.9

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001

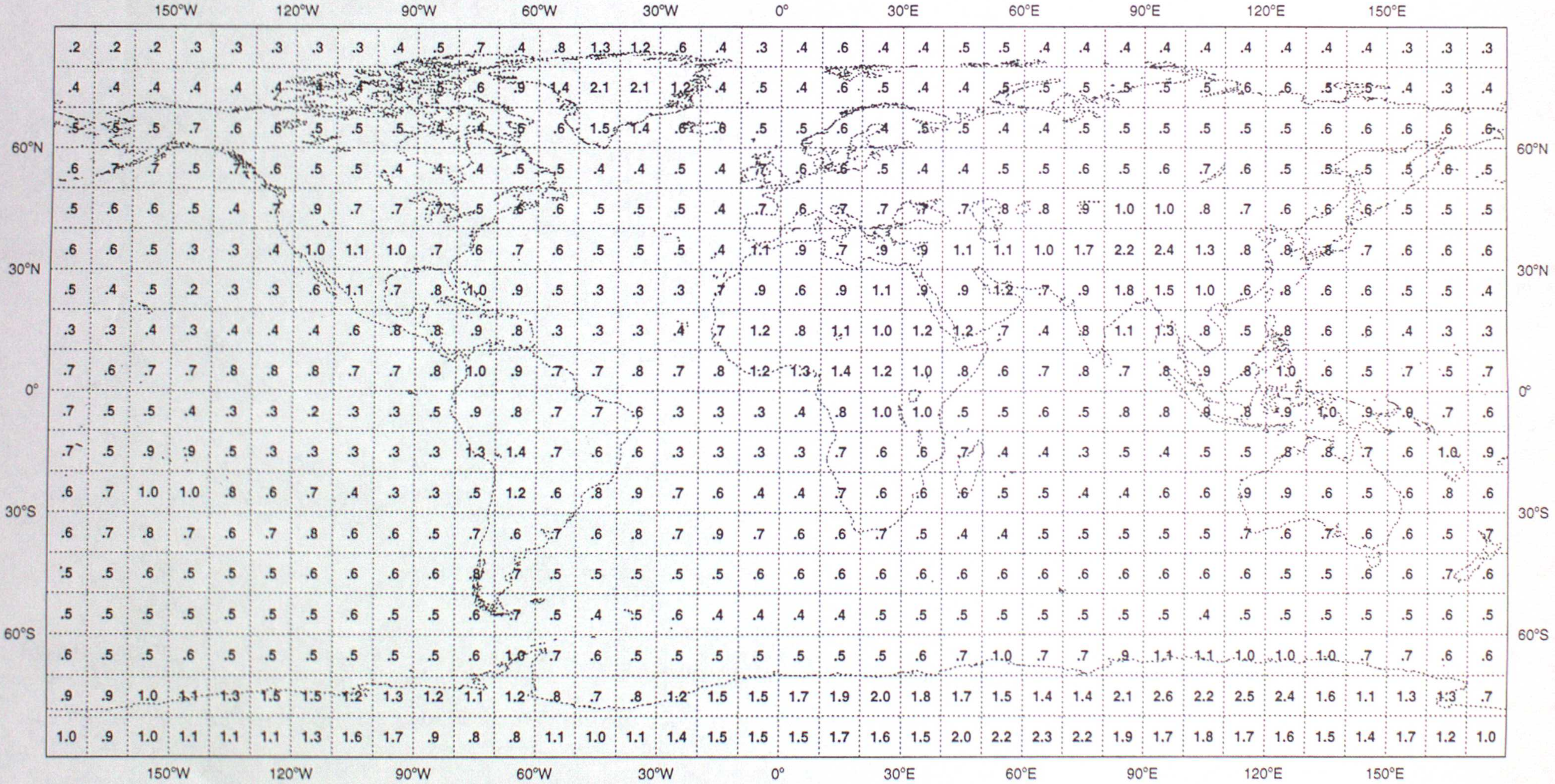
Channel: AMSUA-7 (300 hPa)

NOAA16, using all observations



.7	.7	.8	.9	1.1	1.0	1.0	1.0	1.1	1.4	1.7	1.5	1.3	1.1	1.4	1.2	.9	.9	1.1	1.2	1.1	.9	1.2	1.3	.9	.6	.7	1.0	.8	.6	.6	.6	1.0	1.2	1.0	.9
1.5	1.4	1.5	1.3	1.1	1.2	1.6	1.6	1.7	2.1	2.7	2.3	1.8	1.5	1.2	1.7	1.6	1.5	1.6	1.9	1.9	1.6	1.7	2.4	1.9	1.9	2.0	2.0	1.7	1.5	1.7	2.1	2.1	1.9	1.5	1.7
2.3	1.7	2.2	2.9	2.7	3.2	3.5	3.3	3.1	3.0	2.6	2.8	2.7	3.1	2.9	3.4	3.7	3.1	2.6	3.3	3.3	3.1	3.3	3.4	3.8	4.1	3.8	3.9	3.3	3.5	4.3	4.7	4.5	4.2	3.6	3.6
2.6	2.3	2.3	3.0	3.7	4.8	5.2	5.2	5.2	4.5	4.1	3.8	3.4	3.1	3.6	4.5	3.5	3.8	4.0	4.1	3.8	4.0	4.1	5.2	5.1	5.6	5.4	5.3	4.9	4.6	5.2	5.5	3.8	3.6	4.0	3.7
4.6	5.6	5.8	5.3	4.8	5.1	6.8	7.0	7.6	7.2	5.5	5.3	5.0	4.4	5.3	5.5	4.3	4.4	6.1	6.2	5.0	5.1	5.9	6.4	7.3	7.2	7.1	6.3	6.4	6.3	6.2	5.9	5.2	5.5	6.2	5.8
7.6	7.8	6.1	3.9	2.5	2.9	6.0	8.4	8.8	7.1	6.4	7.3	7.1	7.0	6.4	5.1	3.1	5.1	6.5	6.4	5.0	4.9	7.2	7.8	6.2	6.8	8.3	8.3	7.8	7.1	6.5	7.8	7.7	8.1	7.9	7.2
6.5	5.6	3.7	5.5	3.0	2.5	5.1	8.5	7.1	6.6	8.1	9.5	7.0	5.1	3.5	2.7	3.3	5.0	5.7	4.1	4.0	3.7	4.1	4.4	2.9	3.9	8.0	8.3	6.3	5.6	7.1	7.0	8.1	7.4	6.9	5.3
3.6	4.9	5.9	6.7	6.5	5.4	8.2	8.3	7.6	7.9	8.1	6.5	3.2	1.9	2.3	3.5	5.5	7.7	7.7	6.0	4.5	4.8	4.3	2.9	4.4	5.0	8.6	11.3	7.8	4.6	6.9	7.4	5.9	5.6	4.2	3.5
8.3	7.5	6.7	7.5	8.8	9.5	10.0	10.4	9.2	9.6	10.3	10.2	8.4	7.1	8.2	9.4	10.2	11.3	11.7	10.5	9.9	6.8	5.3	6.7	10.0	9.2	9.4	9.4	8.6	9.1	9.1	8.6	8.9	10.2	7.7	8.3
8.6	6.9	5.8	4.1	2.5	2.2	1.6	1.2	2.0	2.9	8.2	10.0	9.2	7.4	4.6	2.6	2.5	2.9	3.9	7.4	7.5	3.9	3.7	5.4	7.6	7.6	10.4	10.2	10.3	7.9	7.5	8.6	9.5	10.2	8.2	8.9
6.3	7.4	9.1	8.5	4.3	3.1	1.4	1.1	1.3	1.1	4.9	7.0	8.2	6.7	5.7	3.1	1.1	.6	.8	1.5	1.8	2.2	2.3	2.2	3.6	2.6	5.0	4.1	4.6	4.8	2.8	2.4	3.2	7.8	9.2	8.8
6.9	8.2	9.8	10.5	9.1	7.2	7.3	3.5	2.6	2.5	3.0	6.0	8.2	8.2	9.4	8.0	6.2	3.4	1.5	1.7	2.4	3.4	3.1	4.8	5.0	3.2	2.1	3.8	4.8	5.5	4.3	3.6	2.6	3.5	6.2	6.7
6.6	8.8	9.7	8.5	7.5	7.8	8.9	6.6	6.2	5.3	6.1	6.5	7.1	7.4	8.4	7.8	8.2	6.3	5.8	5.3	5.1	4.9	4.6	4.7	6.0	4.8	4.6	5.3	4.9	6.0	5.4	5.3	3.5	5.5	6.3	7.1
4.8	4.9	6.9	6.9	6.2	5.1	4.8	6.4	5.9	5.9	6.5	6.7	6.3	6.7	5.5	4.0	4.4	5.2	5.6	5.1	5.8	6.5	5.8	5.7	5.1	5.0	4.9	4.6	5.1	5.5	5.4	5.1	3.8	3.4	4.8	4.9
3.7	4.2	4.6	4.6	5.3	5.0	4.8	5.0	5.5	5.3	5.4	5.5	4.8	5.3	5.4	4.6	3.5	3.5	3.5	4.1	4.2	4.9	5.6	5.0	4.5	4.1	3.9	4.5	4.5	5.1	5.0	4.8	4.6	3.6	4.0	3.7
3.8	3.8	4.1	3.9	3.9	4.0	3.6	4.3	5.1	5.4	5.2	6.1	5.8	5.3	4.7	4.2	3.6	2.8	2.8	2.8	3.5	3.6	3.9	3.8	3.4	3.1	3.2	3.7	3.9	4.4	4.5	4.7	4.4	3.8	3.8	3.9
2.1	2.5	3.0	3.7	4.2	4.7	4.9	5.2	5.5	5.4	6.4	7.1	6.5	5.4	4.2	4.1	4.1	3.4	2.6	2.3	2.5	1.8	1.1	.8	1.3	1.6	1.4	1.6	1.8	1.8	1.5	1.2	1.0	1.1	2.4	1.8
2.5	2.2	2.5	2.8	2.9	2.9	2.9	2.5	2.5	2.8	3.2	3.3	3.2	3.0	2.8	2.7	2.6	2.5	1.9	1.6	1.1	1.0	.9	1.0	.9	1.0	1.0	1.1	1.1	1.1	1.2	1.3	1.5	2.0	2.5	2.7

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations



.2	.2	.2	.3	.3	.3	.3	.3	.4	.5	.7	.4	.8	1.3	1.2	.6	.4	.3	.4	.6	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.6	.9	1.4	2.1	2.1	1.2	.4	.5	.4	.6	.5	.4	.4	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.4	.3	.4
.5	.5	.5	.7	.6	.6	.5	.5	.5	.4	.4	.5	.6	1.5	1.4	.6	.8	.5	.5	.6	.4	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6
.6	.7	.7	.5	.7	.6	.5	.5	.4	.4	.4	.5	.5	.4	.4	.5	.4	.7	.6	.6	.5	.4	.4	.5	.5	.6	.5	.6	.7	.6	.5	.5	.5	.5	.6	.5
.5	.6	.6	.5	.4	.7	.9	.7	.7	.7	.5	.6	.6	.5	.5	.5	.4	.7	.6	.7	.7	.7	.7	.8	.8	.9	1.0	1.0	.8	.7	.6	.6	.6	.5	.5	.5
.6	.6	.5	.3	.3	.4	1.0	1.1	1.0	.7	.6	.7	.6	.5	.5	.5	.4	1.1	.9	.7	.9	.9	1.1	1.1	1.0	1.7	2.2	2.4	1.3	.8	.8	.8	.7	.6	.6	.6
.5	.4	.5	.2	.3	.3	.6	1.1	.7	.8	1.0	.9	.5	.3	.3	.3	.7	.9	.6	.9	1.1	.9	.9	1.2	.7	.9	1.8	1.5	1.0	.6	.8	.6	.6	.5	.5	.4
.3	.3	.4	.3	.4	.4	.4	.6	.8	.8	.9	.8	.3	.3	.3	.4	.7	1.2	.8	1.1	1.0	1.2	1.2	.7	.4	.8	1.1	1.3	.8	.5	.8	.6	.6	.4	.3	.3
.7	.6	.7	.7	.8	.8	.8	.7	.7	.8	1.0	.9	.7	.7	.8	.7	.8	1.2	1.3	1.4	1.2	1.0	.8	.6	.7	.8	.7	.8	.9	.8	1.0	.6	.5	.7	.5	.7
.7	.5	.5	.4	.3	.3	.2	.3	.3	.5	.9	.8	.7	.7	.6	.3	.3	.3	.4	.8	1.0	1.0	.5	.5	.6	.5	.8	.8	.9	.8	.9	1.0	.9	.8	.7	.6
.7	.5	.9	.9	.5	.3	.3	.3	.3	.3	1.3	1.4	.7	.6	.6	.3	.3	.3	.3	.7	.6	.6	.7	.4	.4	.3	.5	.4	.5	.5	.8	.8	.7	.6	1.0	.9
.6	.7	1.0	1.0	.8	.6	.7	.4	.3	.3	.5	1.2	.6	.8	.9	.7	.6	.4	.4	.7	.6	.6	.6	.5	.5	.4	.4	.6	.6	.9	.9	.6	.5	.6	.8	.6
.6	.7	.8	.7	.6	.7	.8	.6	.6	.5	.7	.6	.7	.6	.8	.7	.9	.7	.6	.6	.7	.5	.4	.4	.5	.5	.5	.5	.5	.7	.6	.7	.6	.6	.5	.7
.5	.5	.6	.5	.5	.5	.6	.6	.6	.6	.8	.7	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.6	.6	.7	.6
.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.6	.7	.5	.4	.5	.6	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.6	.5
.6	.5	.5	.6	.5	.5	.5	.5	.5	.5	.6	1.0	.7	.6	.5	.5	.5	.5	.5	.5	.5	.6	.7	1.0	.7	.7	.9	1.1	1.1	1.0	1.0	1.0	.7	.7	.6	.6
.9	.9	1.0	1.1	1.3	1.5	1.5	1.2	1.3	1.2	1.1	1.2	.8	.7	.8	1.2	1.5	1.5	1.7	1.9	2.0	1.8	1.7	1.5	1.4	1.4	2.1	2.6	2.2	2.5	2.4	1.6	1.1	1.3	1.3	.7
1.0	.9	1.0	1.1	1.1	1.1	1.3	1.6	1.7	.9	.8	.8	1.1	1.0	1.1	1.4	1.5	1.5	1.5	1.7	1.6	1.5	2.0	2.2	2.3	2.2	1.9	1.7	1.8	1.7	1.6	1.5	1.4	1.7	1.2	1.0

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations

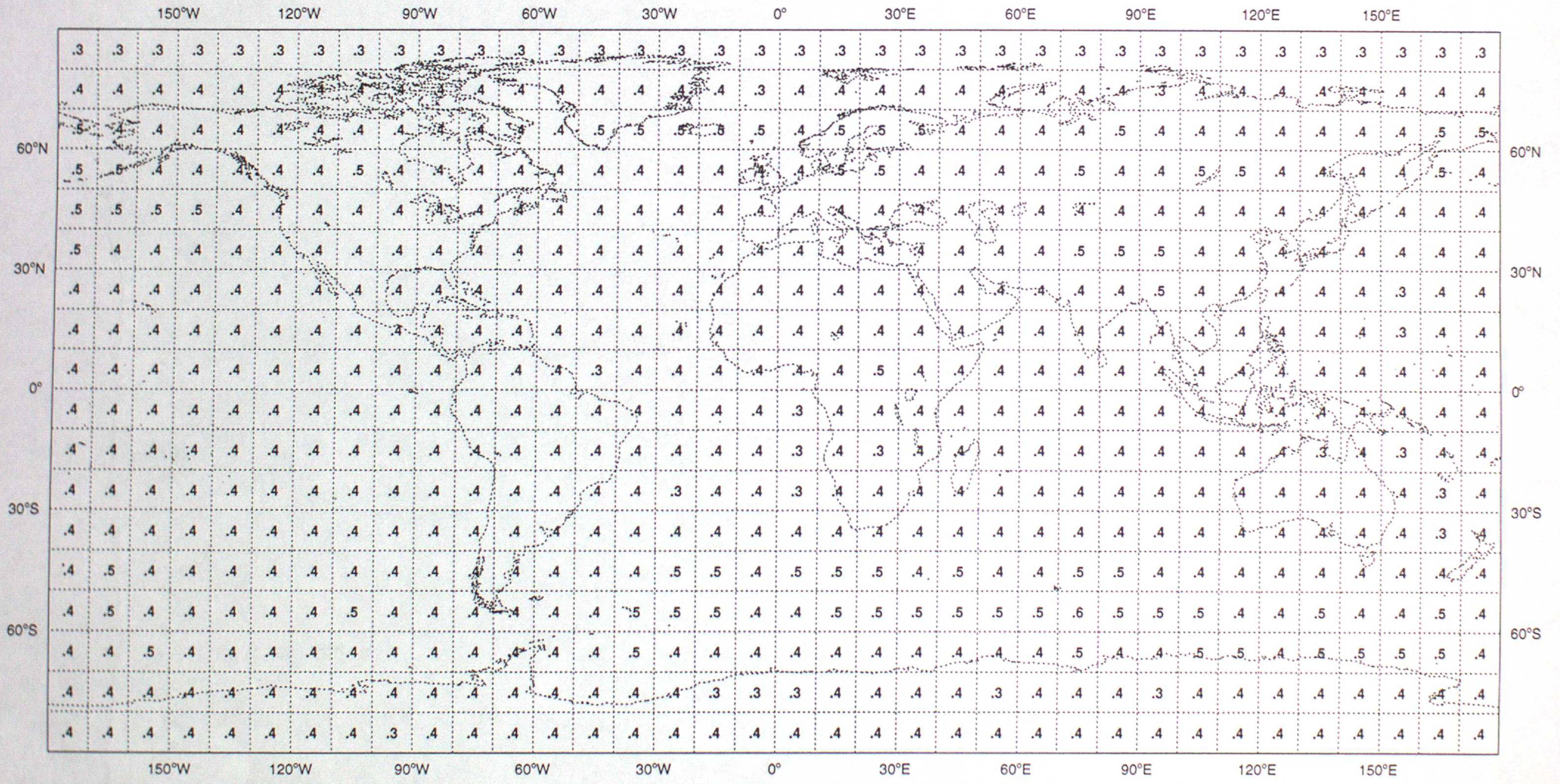

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). MAY 2001
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations

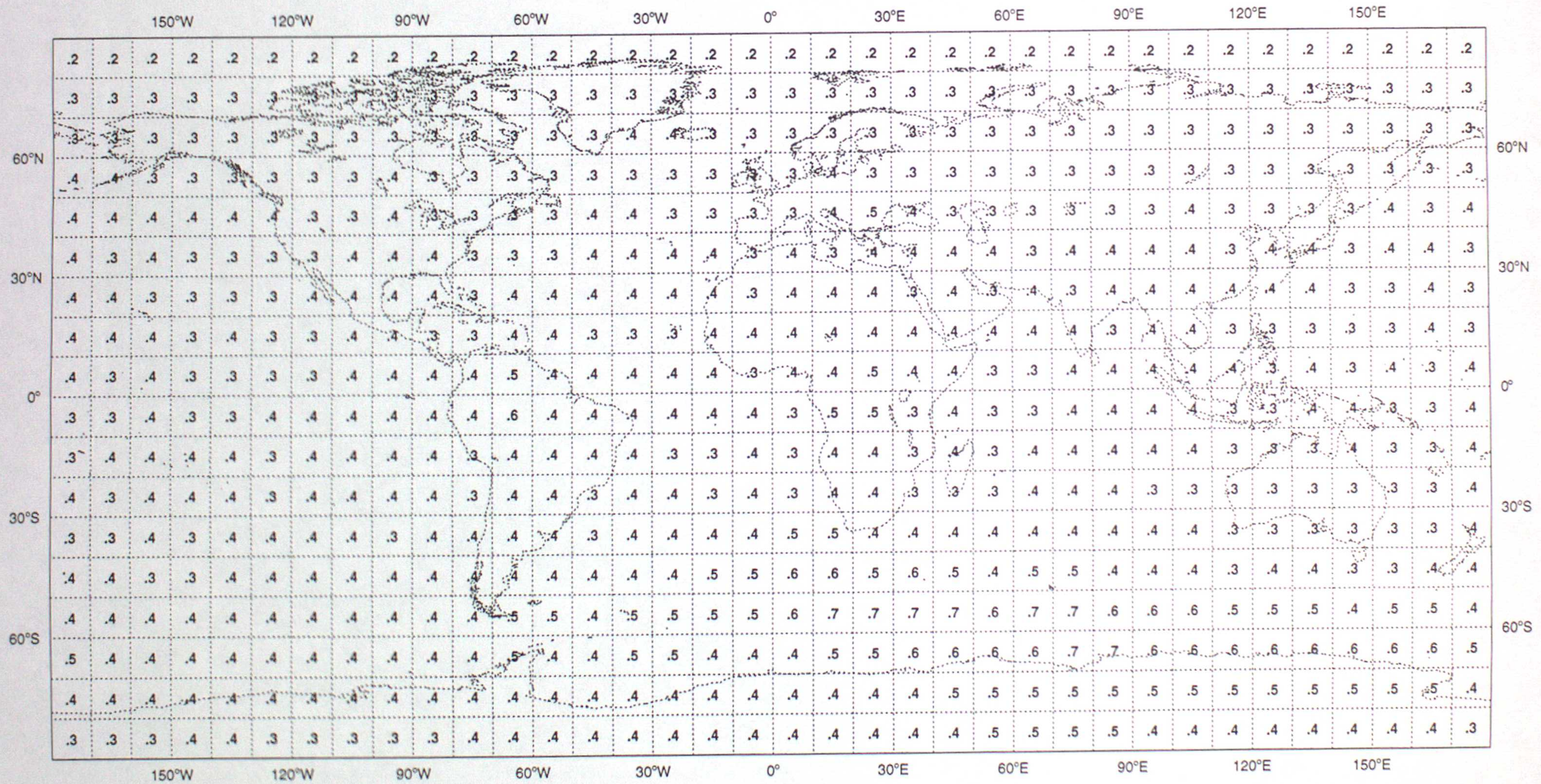

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures
Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored :Mean sea-level pressure (hPa)
:Wind speed ($m\ s^{-1}$)
:Wind direction (degrees)

Parameters monitored

	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 $m\ s^{-1}$ (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13502	24.1	-23.2	ALL	P	SUR	278	0	0	0.4	-0.3	0.6
13505	16.3	-23.8	ALL	P	SUR	254	0	0	0.6	0.1	0.7
13506	16.5	-23.3	ALL	P	SUR	250	0	0	0.6	0.4	0.8
13507	14.4	-22.4	ALL	P	SUR	248	0	0	0.6	0.8	1.0
13509	13.6	-20.5	ALL	P	SUR	248	0	0	0.6	0.2	0.7
13510	12.7	-19.2	ALL	P	SUR	237	0	0	0.6	0.3	0.7
26510	75.2	-14.1	ALL	P	SUR	87	0	0	1.1	0.6	1.3
31535	17.9	-71.3	ALL	P	SUR	932	545	58	7.3	-2.1	7.6
41502	24.7	-77.7	ALL	P	SUR	205	0	0	0.8	1.1	1.3
41504	23.5	-67.2	ALL	P	SUR	231	0	0	1.0	0.5	1.1
41505	27.8	-64.2	ALL	P	SUR	203	0	0	1.0	-1.8	2.0
41523	29.6	-57.8	ALL	P	SUR	329	0	0	0.7	0.2	0.8
41525	19.7	-38.4	ALL	P	SUR	286	0	0	0.5	0.3	0.5
41528	16.1	-44.0	ALL	P	SUR	273	0	0	0.4	0.3	0.6
41552	19.4	-38.4	ALL	P	SUR	648	0	0	0.5	0.0	0.5
41559	15.9	-41.8	ALL	P	SUR	609	0	0	0.5	0.1	0.5
41560	14.9	-36.9	ALL	P	SUR	602	0	0	0.5	0.3	0.6
41561	11.5	-38.5	ALL	P	SUR	562	0	0	0.5	0.1	0.6
41563	10.6	-30.5	ALL	P	SUR	600	1	0	0.5	0.3	0.6
41571	38.4	-40.3	ALL	P	SUR	499	0	0	0.7	0.2	0.7
41572	25.1	-53.4	ALL	P	SUR	285	0	0	0.5	-0.3	0.6
41595	30.1	-80.6	ALL	P	SUR	704	0	0	0.5	0.5	0.7
41613	19.6	-48.3	ALL	P	SUR	594	0	0	0.5	0.5	0.7
41616	20.6	-58.6	ALL	P	SUR	664	0	0	0.4	0.5	0.6
41639	22.9	-63.6	ALL	P	SUR	234	0	0	0.5	1.3	1.4
41642	23.4	-66.4	ALL	P	SUR	294	0	0	0.5	0.3	0.6
41644	30.6	-41.7	ALL	P	SUR	349	0	0	0.7	0.5	0.9
44546	60.9	-26.6	ALL	P	SUR	1180	1	0	1.1	-0.6	1.3
44548	49.2	-42.3	ALL	P	SUR	614	0	0	0.8	-0.6	1.0
44549	49.2	-41.4	ALL	P	SUR	706	0	0	1.4	-0.7	1.5
44550	50.6	-44.5	ALL	P	SUR	720	0	0	0.9	-0.9	1.2
44610	58.3	-21.1	ALL	P	SUR	1699	0	0	1.2	0.4	1.3
44611	45.0	-3.0	ALL	P	SUR	657	0	0	0.7	0.4	0.8
44612	37.4	-29.4	ALL	P	SUR	1193	0	0	0.6	0.0	0.6
44613	34.5	-27.2	ALL	P	SUR	752	0	0	0.6	0.3	0.7
44616	47.6	-47.1	ALL	P	SUR	702	0	0	1.0	0.0	1.0
44620	26.8	-41.7	ALL	P	SUR	717	1	0	0.5	0.1	0.5
44621	54.7	-45.4	ALL	P	SUR	708	1	0	1.2	-0.1	1.2
44623	34.0	-23.2	ALL	P	SUR	687	0	0	0.5	0.2	0.6
44624	44.4	-44.9	ALL	P	SUR	742	0	0	0.8	-0.4	0.9
44625	46.3	-51.5	ALL	P	SUR	746	1	0	0.8	-0.7	1.1
44629	42.0	-45.7	ALL	P	SUR	703	0	0	1.0	-0.5	1.2
44721	37.9	-41.9	ALL	P	SUR	716	0	0	0.8	0.1	0.8
44722	39.4	-35.3	ALL	P	SUR	713	0	0	0.6	-0.1	0.6
44724	33.0	-16.3	ALL	P	SUR	290	182	63	1.9	0.7	2.0
44725	50.3	-42.5	ALL	P	SUR	684	0	0	0.7	-0.5	0.9
44729	46.8	-8.6	ALL	P	SUR	697	0	0	0.6	0.4	0.7
44741	60.2	-48.3	ALL	P	SUR	183	0	0	0.9	-0.1	0.9
44761	53.8	-21.8	ALL	P	SUR	1033	0	0	0.8	-0.2	0.8
44762	44.9	-7.9	ALL	P	SUR	579	2	0	0.7	0.2	0.7
44765	37.4	-37.1	ALL	P	SUR	681	5	1	0.6	0.1	0.7
44770	56.5	-13.6	ALL	P	SUR	395	0	0	0.6	0.2	0.6
44771	55.1	-31.1	ALL	P	SUR	623	0	0	0.8	0.1	0.8
44772	44.0	-4.1	ALL	P	SUR	1115	10	1	0.8	-0.1	0.8
44774	46.6	-20.8	ALL	P	SUR	1410	2	0	1.1	-0.3	1.2
44775	41.1	-49.6	ALL	P	SUR	710	0	0	0.9	0.0	0.9
44776	50.0	-34.4	ALL	P	SUR	690	1	0	0.9	-0.4	1.0
44778	44.8	-36.7	ALL	P	SUR	712	0	0	0.7	-0.1	0.7
44801	41.1	-66.6	ALL	P	SUR	1	0	0	0.0	-0.7	0.7
44813	42.4	-70.7	ALL	P	SUR	1	0	0	0.0	-1.4	1.4

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
44845	46.7	-48.7	ALL	P	SUR	1	0	0	0.0	-3.1	3.1
45505	41.7	-82.4	ALL	P	SUR	1	0	0	0.0	0.5	0.5
45803	45.4	-82.8	ALL	P	SUR	1	0	0	0.0	0.9	0.9
45805	41.7	-82.4	ALL	P	SUR	1	0	0	0.0	-0.9	0.9
45837	45.5	-81.0	ALL	P	SUR	1	0	0	0.0	-5.9	5.9
48581	62.6	-60.4	ALL	P	SUR	360	0	0	1.6	0.6	1.8
62501	38.9	-18.7	ALL	P	SUR	618	0	0	0.6	0.1	0.6
62503	37.4	-20.0	ALL	P	SUR	684	0	0	0.5	-0.4	0.7
62504	39.6	-23.1	ALL	P	SUR	873	0	0	0.6	-0.4	0.7
62505	39.7	-11.6	ALL	P	SUR	648	0	0	0.6	0.0	0.6
62506	32.5	-25.6	ALL	P	SUR	1	0	0	0.0	1.2	1.2
62510	42.4	-20.3	ALL	P	SUR	247	0	0	0.8	-1.0	1.2
62511	38.7	-20.8	ALL	P	SUR	217	4	2	0.5	-0.5	0.7
62514	56.8	-14.4	ALL	P	SUR	636	1	0	0.7	-0.1	0.8
62564	36.9	-18.2	ALL	P	SUR	180	0	0	0.5	0.1	0.5
62596	63.1	-32.7	ALL	P	SUR	687	1	0	0.7	-0.2	0.7
62606	57.0	-9.9	ALL	P	SUR	1	0	0	0.0	-1.1	1.1
62705	54.9	-12.6	ALL	P	SUR	1	0	0	0.0	0.0	0.0
62706	57.0	-9.9	ALL	P	SUR	1	0	0	0.0	-2.0	2.0
62709	57.0	0.0	ALL	P	SUR	1	0	0	0.0	-0.8	0.8
62725	53.8	-3.5	ALL	P	SUR	1	0	0	0.0	-0.8	0.8
62891	53.5	-5.4	ALL	P	SUR	1	0	0	0.0	0.3	0.3
64698	63.3	-29.4	ALL	P	SUR	672	0	0	0.8	-0.4	0.9
64845	59.1	-11.4	ALL	P	SUR	1	0	0	0.0	-0.6	0.6
65595	55.9	-38.6	ALL	P	SUR	893	2	0	0.9	-0.2	0.9
65600	61.0	-2.2	ALL	P	SUR	1244	4	0	0.9	-0.4	1.0
65602	60.0	-30.7	ALL	P	SUR	1694	6	0	0.9	-0.3	1.0
65662	58.1	-37.1	ALL	P	SUR	1026	8	1	1.3	-0.4	1.3
65663	51.7	-37.8	ALL	P	SUR	705	12	2	1.6	-0.8	1.7
68805	54.9	-12.6	ALL	P	SUR	1	0	0	0.0	-0.1	0.1
92960	45.3	-80.0	ALL	P	SUR	1	1	100			
WIND SPEED											
12569	39.2	-15.5	ALL	SPEED	SUR	1	0	0	0.0	-0.2	0.2
13937	21.5	-30.4	ALL	SPEED	SUR	1	0	0	0.0	-0.3	0.3
367999	26.2	-78.5	ALL	SPEED	SUR	1	0	0	0.0	2.1	2.1
40642	23.1	-66.1	ALL	SPEED	SUR	1	0	0	0.0	0.4	0.4
41502	24.7	-77.7	ALL	SPEED	SUR	34	0	0	1.9	-6.1	6.4
41552	19.4	-38.4	ALL	SPEED	SUR	641	0	0	1.1	-0.4	1.2
41559	15.9	-41.8	ALL	SPEED	SUR	608	0	0	1.3	0.5	1.4
41560	14.9	-36.9	ALL	SPEED	SUR	595	0	0	1.3	-0.3	1.3
41561	11.5	-38.5	ALL	SPEED	SUR	558	0	0	2.4	0.2	2.4
41563	10.6	-30.5	ALL	SPEED	SUR	600	0	0	1.6	0.4	1.7
41639	22.9	-63.6	ALL	SPEED	SUR	224	1	0	4.0	6.6	7.7
41642	23.4	-66.4	ALL	SPEED	SUR	289	0	0	2.6	1.2	2.9
41644	30.6	-41.7	ALL	SPEED	SUR	3	0	0	1.4	-0.2	1.4
44762	44.9	-7.9	ALL	SPEED	SUR	5	2	40	0.4	-2.5	2.5
44801	41.1	-66.6	ALL	SPEED	SUR	1	0	0	0.0	-2.2	2.2
44845	46.7	-48.7	ALL	SPEED	SUR	1	0	0	0.0	10.1	10.1
485185	27.5	-79.8	ALL	SPEED	SUR	1	0	0	0.0	2.1	2.1
566265	26.2	-78.7	ALL	SPEED	SUR	1	0	0	0.0	-0.2	0.2
62504	39.6	-23.1	ALL	SPEED	SUR	869	0	0	2.2	0.2	2.2
62506	32.5	-25.6	ALL	SPEED	SUR	160	2	1	5.9	-0.6	6.0
62552	47.5	-15.1	ALL	SPEED	SUR	508	0	0	1.5	-0.1	1.5
62555	39.9	-16.6	ALL	SPEED	SUR	430	0	0	1.3	-0.2	1.4
62556	39.5	-22.3	ALL	SPEED	SUR	551	0	0	1.5	0.2	1.5
62557	39.9	-11.7	ALL	SPEED	SUR	123	0	0	3.4	-9.2	9.8
62558	46.7	-20.5	ALL	SPEED	SUR	514	0	0	1.6	-0.5	1.7
62559	45.8	-19.2	ALL	SPEED	SUR	498	0	0	1.6	0.1	1.6
62560	40.5	-12.5	ALL	SPEED	SUR	215	0	0	1.3	-0.7	1.5
62565	41.3	-13.1	ALL	SPEED	SUR	315	0	0	1.1	0.1	1.1

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
62566	41.4	-15.9	ALL	SPEED	SUR	486	0	0	1.3	-0.4	1.4
62567	39.9	-16.1	ALL	SPEED	SUR	499	0	0	1.4	-0.4	1.5
62569	39.5	-14.9	ALL	SPEED	SUR	512	0	0	1.2	0.1	1.2
62570	46.8	-20.4	ALL	SPEED	SUR	557	0	0	2.0	0.3	2.1
62571	39.5	-14.4	ALL	SPEED	SUR	407	0	0	1.3	-0.1	1.3
62572	41.5	-19.8	ALL	SPEED	SUR	531	0	0	1.4	0.0	1.4
62606	57.0	-9.9	ALL	SPEED	SUR	1	0	0	0.0	0.5	0.5
62705	54.9	-12.6	ALL	SPEED	SUR	1	0	0	0.0	-2.4	2.4
62706	57.0	-9.9	ALL	SPEED	SUR	1	0	0	0.0	0.3	0.3
628627	26.7	-79.2	ALL	SPEED	SUR	1	0	0	0.0	4.3	4.3
62891	53.5	-5.4	ALL	SPEED	SUR	1	0	0	0.0	0.0	0.0
65602	60.0	-30.7	ALL	SPEED	SUR	1	0	0	0.0	23.7	23.7
869526	27.5	-79.8	ALL	SPEED	SUR	1	0	0	0.0	1.3	1.3
948608	26.2	-78.8	ALL	SPEED	SUR	1	0	0	0.0	0.5	0.5
WIND DIRECTIONS											
12569	39.2	-15.5	ALL	DIRN.	SUR	1	0	0	0.0	-2.7	2.7
13937	21.5	-30.4	ALL	DIRN.	SUR	1	0	0	0.0	-51.2	51.2
367999	26.2	-78.5	ALL	DIRN.	SUR	1	0	0	0.0	9.0	9.0
40642	23.1	-66.1	ALL	DIRN.	SUR	1	0	0	0.0	10.7	10.7
41552	19.4	-38.4	ALL	DIRN.	SUR	414	0	0	13.6	11.2	17.6
41559	15.9	-41.8	ALL	DIRN.	SUR	601	0	0	10.5	1.0	10.6
41560	14.9	-36.9	ALL	DIRN.	SUR	579	0	0	10.7	16.7	19.8
41561	11.5	-38.5	ALL	DIRN.	SUR	556	0	0	11.5	6.8	13.3
41563	10.6	-30.5	ALL	DIRN.	SUR	544	0	0	13.8	12.8	18.8
41639	22.9	-63.6	ALL	DIRN.	SUR	77	1	1	34.8	2.5	34.9
41642	23.4	-66.4	ALL	DIRN.	SUR	105	0	0	25.1	4.7	25.5
44762	44.9	-7.9	ALL	DIRN.	SUR	4	2	50	115.0	13.5	115.8
44845	46.7	-48.7	ALL	DIRN.	SUR	1	0	0	0.0	-8.8	8.8
62504	39.6	-23.1	ALL	DIRN.	SUR	534	0	0	15.9	-1.9	16.0
62506	32.5	-25.6	ALL	DIRN.	SUR	21	2	10	28.3	8.8	29.6
62552	47.5	-15.1	ALL	DIRN.	SUR	289	0	0	14.5	-3.4	14.9
62555	39.9	-16.6	ALL	DIRN.	SUR	265	0	0	61.8	12.1	63.0
62556	39.5	-22.3	ALL	DIRN.	SUR	328	0	0	11.5	11.6	16.3
62557	39.9	-11.7	ALL	DIRN.	SUR	10	0	0	6.5	-8.9	11.0
62558	46.7	-20.5	ALL	DIRN.	SUR	239	0	0	20.8	-13.2	24.6
62559	45.8	-19.2	ALL	DIRN.	SUR	253	0	0	13.4	-6.2	14.8
62560	40.5	-12.5	ALL	DIRN.	SUR	190	0	0	22.2	-3.3	22.5
62565	41.3	-13.1	ALL	DIRN.	SUR	211	0	0	11.4	-9.5	14.8
62566	41.4	-15.9	ALL	DIRN.	SUR	312	0	0	10.8	-3.9	11.5
62567	39.9	-16.1	ALL	DIRN.	SUR	305	0	0	11.7	3.8	12.3
62569	39.5	-14.9	ALL	DIRN.	SUR	328	0	0	8.4	-7.1	11.0
62570	46.8	-20.4	ALL	DIRN.	SUR	308	0	0	13.9	2.1	14.0
62571	39.5	-14.4	ALL	DIRN.	SUR	257	0	0	10.2	-6.0	11.9
62572	41.5	-19.8	ALL	DIRN.	SUR	314	0	0	13.2	0.5	13.2
62706	57.0	-9.9	ALL	DIRN.	SUR	1	0	0	0.0	-50.5	50.5
628627	26.7	-79.2	ALL	DIRN.	SUR	1	0	0	0.0	25.3	25.3
65602	60.0	-30.7	ALL	DIRN.	SUR	1	0	0	0.0	-35.6	35.6

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures:		
Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:40°N - 70°N, 60°W - 0°W.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in $m\ s^{-1}$
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.
GROSS ERROR LIMITS	:10.0 °C ; 60 $m\ s^{-1}$ Vector Wind	
SELECTION CRITERIA	:N REP $\geq$ 20	

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	2862	1	4	1.5	-0.1	2820	0	5	0	6.8	0.9
ACA	1934	0	3	1.5	-0.1	1947	0	4	0	6.0	1.0
AEA	421	0	4	1.8	-0.2	417	1	5	0	8.0	0.3
AEL	240	0	5	1.6	-0.4	240	0	5	0	8.2	1.0
AFL	491	0	3	1.9	0.4	487	0	3	0	6.9	0.8
AFR	848	1	6	1.7	0.2	856	0	7	0	7.6	1.1
AIH	180	0	4	1.7	0.0	184	0	3	0	5.3	0.7
AJM	120	0	0	1.2	-0.4	121	0	1	0	7.0	1.7
ALM	74	0	3	1.3	0.3	76	0	3	0	5.8	0.9
AMM	89	0	1	1.3	0.6	91	0	2	0	6.8	0.7
AMX	169	1	4	1.7	0.3	171	0	5	0	10.1	1.5
ANZ	81	0	63	1.8	-0.9	80	1	64	0	7.9	1.3
AUA	22	0	0	1.5	0.9	22	0	0	0	4.4	0.2
AVA	85	1	5	1.8	0.7	86	1	7	0	8.9	0.6
AZA	522	0	4	2.3	0.3	527	0	4	0	7.4	0.2
BAL	124	0	9	1.4	-0.4	129	0	10	0	6.6	0.3
BAW	871	0	6	1.9	0.2	885	0	6	0	6.4	0.4
BLX	32	3	3	1.4	0.1	30	3	3	0	5.6	2.4
BWA	62	0	5	1.9	1.3	64	0	6	0	11.5	-0.5
CFC	44	0	11	2.1	0.7	43	0	19	0	10.4	4.0
CFG	308	0	4	1.9	-0.6	306	1	4	0	7.3	1.2
CLX	364	1	2	1.6	0.0	361	0	2	0	6.6	0.2
CMM	497	0	2	1.3	-0.1	502	0	3	0	5.6	0.4
COA	461	0	8	1.5	-0.2	460	0	11	0	9.4	1.6
CRL	235	0	2	1.7	0.6	239	0	5	0	9.2	1.5
CTB	35	3	17	2.2	0.3	35	0	9	0	6.2	1.0
CUB	79	0	4	1.8	1.2	80	1	5	0	8.4	1.7
DAL	1631	0	16	1.7	-0.4	1641	0	17	0	7.7	0.9
DLH	1581	1	4	1.5	0.1	1585	0	4	0	6.1	0.8
EDW	21	0	0	1.4	0.1	21	0	0	0	4.6	1.1
EIN	27	0	7	1.2	-0.2	27	0	7	0	5.3	0.6
ELY	73	0	1	1.8	0.6	74	0	0	0	5.5	0.3
ETH	33	0	12	1.1	-0.1	33	0	12	0	5.9	1.3
EWW	108	0	5	1.2	0.2	111	0	5	0	5.9	1.2
FDX	724	0	31	1.5	0.2	726	0	31	0	7.3	0.8
FIN	297	0	2	1.6	0.2	283	0	2	0	6.3	0.6
GAF	56	0	2	1.2	-0.6	56	0	4	0	6.5	1.7
GCO	131	0	3	1.5	0.3	132	0	100	0	17.7	6.0
GRL	56	0	0	1.4	0.1	56	0	0	0	4.6	0.8
GTI	55	2	2	2.0	-0.9	55	0	4	0	7.2	1.6
IBE	1413	1	6	1.7	0.5	1390	0	8	0	8.1	0.3
ICE	1209	0	2	1.4	0.1	1177	0	3	0	6.3	1.1
IWD	44	2	2	0.9	-0.5	44	0	2	0	8.6	1.7
JKK	261	0	13	1.3	-0.1	256	0	14	0	7.0	1.2
JMC	96	1	5	1.9	0.2	94	0	9	0	9.6	1.2
KLM	1588	0	8	1.6	0.0	1613	0	8	0	6.6	1.0
LDA	66	0	5	1.7	-0.2	65	0	3	0	5.2	1.1
LDI	316	0	2	1.6	-0.6	324	0	4	0	7.2	0.6
LIB	373	1	8	1.8	0.7	378	1	9	0	7.8	0.8
LOT	310	0	2	1.8	-1.1	308	0	4	0	7.3	0.8
LTU	514	0	3	1.6	-0.4	524	0	4	0	8.3	0.9
MAS	53	0	4	1.5	0.4	50	0	4	0	5.6	1.5
MON	72	6	8	1.9	0.0	72	0	1	0	4.8	0.3
MPD	154	1	6	1.6	-0.1	155	1	6	0	8.6	0.1
MPH	335	1	2	1.8	-0.9	333	0	2	0	6.7	0.4
NCA	30	0	0	1.4	0.2	30	0	0	0	4.9	0.7
NWA	3966	0	1	1.5	0.4	3954	0	2	0	6.5	0.7
PAC	72	0	8	1.9	-0.7	73	0	10	0	7.5	0.8
RAM	39	0	8	2.2	-0.7	39	0	8	0	7.6	2.1

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RCH	85	1	6	2.3	0.4	82	0	99	0	11.4	2.0
RRR	126	2	10	1.6	-0.1	127	0	9	0	7.5	1.6
RZO	119	0	4	1.9	-0.9	117	0	2	0	6.2	1.6
SAS	54	0	2	1.2	0.2	53	0	4	0	8.5	1.5
SIA	43	0	7	1.5	-0.8	44	0	7	0	4.0	0.2
SLR	88	1	7	1.3	0.4	85	0	6	0	6.6	1.6
SSV	22	0	14	1.5	-0.4	21	0	14	0	7.3	2.9
SVA	28	0	0	1.2	-0.2	29	0	0	0	4.1	0.5
SWR	45	9	16	1.3	0.2	47	0	21	0	13.6	4.4
TAP	396	1	5	1.5	-0.1	393	0	7	0	8.3	0.8
TSC	212	0	3	1.6	-0.1	218	0	40	0	6.8	1.2
TWA	219	0	3	1.6	0.3	217	0	5	0	7.1	1.0
UAL	1620	0	100	1.7	0.1	1618	0	100	0	5.6	0.8
UPS	851	0	31	1.5	0.1	861	0	32	0	6.9	0.8
USA	224	0	5	1.7	-0.1	187	0	5	0	6.9	1.1
VIR	498	1	3	1.4	0.0	515	0	3	0	6.4	0.9
WOA	35	3	3	1.0	0.3	35	0	6	0	9.4	-2.1
EU	21067	0	17	1.2	0.1	21067	0	17	0	4.5	0.6
KL	2379	9	41	1.5	1.1	2367	0	41	0	12.5	2.3
LH	540	0	10	1.5	0.8	540	0	10	0	4.5	0.8
N	453	1	5	2.3	0.8	455	0	4	0	6.6	0.5
US ACARS	28791	6	34	1.3	0.3	28791	0	27	0	4.7	0.7

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored

- :NUM OBS :Number of observations available at level shown during period.
- :NUM GROSS :Number of gross errors at level shown during period.
- :SD :SD of difference of observations from background values at level shown excluding those with gross errors.
- :BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DASAP3	12	Z	100	1	0	0.0	18.0	18.0
DBBH	00	Z	100	13	0	13.5	30.2	27.0
DBBH	12	Z	100	13	0	13.3	21.7	17.1
DBLK	12	Z	100	10	0	14.4	46.2	43.9
ELML7	00	Z	100	10	0	9.5	43.8	42.7
ELML7	12	Z	100	15	0	18.0	36.1	31.3
FNOR	00	Z	100	9	0	10.5	40.5	39.1
FNOR	12	Z	100	15	0	12.4	28.7	25.9
FNOU	00	Z	100	13	0	13.8	45.4	43.2
FNOU	12	Z	100	11	0	14.9	39.2	36.3
FNPH	00	Z	100	9	0	16.8	31.2	26.3
FNPH	12	Z	100	12	0	20.9	23.9	11.7
FNRS	00	Z	100	15	0	11.0	31.3	29.3
FNRS	12	Z	100	11	0	11.9	18.9	14.7
LDWR	00	Z	100	30	0	7.3	8.8	5.0
LDWR	12	Z	100	29	0	13.9	14.0	1.1
OVYA2	00	Z	100	8	0	11.7	17.1	12.5
OVYA2	12	Z	100	8	0	10.9	16.1	11.9
OXYH2	00	Z	100	3	0	12.3	14.3	7.3
OXYH2	12	Z	100	2	0	13.0	14.3	6.0
PACDG	00	Z	100	1	0	0.0	55.0	55.0
SWJS	00	Z	100	5	0	8.2	29.4	28.2
SWJS	12	Z	100	3	0	5.2	22.9	22.3
ZCBP6	00	Z	100	5	0	9.4	19.3	16.8
ZCBP6	12	Z	100	7	0	14.3	21.4	16.0
03953	00	Z	100	30	0	8.0	28.1	26.9
03953	12	Z	100	31	0	10.1	23.0	20.6
04018	00	Z	100	29	0	7.6	17.8	16.1
04018	12	Z	100	30	0	9.0	14.2	11.0
04220	00	Z	100	29	0	10.0	26.6	24.6
04220	12	Z	100	31	0	9.5	24.5	22.6
04270	00	Z	100	30	0	10.6	14.7	10.2
04270	12	Z	100	31	0	15.8	19.4	11.3
04339	00	Z	100	29	0	7.8	16.9	15.0
04339	12	Z	100	29	0	7.4	13.6	11.4
04360	00	Z	100	30	0	7.9	15.5	13.3
04360	12	Z	100	31	0	9.1	12.1	8.0
08001	00	Z	100	26	0	17.8	18.6	5.6
08001	12	Z	100	29	0	18.9	19.0	1.9
08508	00	Z	100	28	0	11.5	28.7	26.3
08508	12	Z	100	28	0	15.2	26.8	22.0
08522	00	Z	100	30	0	12.8	36.9	34.6
08522	12	Z	100	31	0	11.7	30.2	27.9
08594	12	Z	100	14	0	10.2	27.7	25.8
60020	00	Z	100	28	0	15.9	42.2	39.0
60020	12	Z	100	31	0	17.5	37.7	33.5
71600	00	Z	100	30	0	11.4	13.6	7.4
71600	12	Z	100	31	0	11.1	14.1	8.6
72201	00	Z	100	28	0	15.2	38.0	34.9
72201	12	Z	100	31	0	32.0	40.3	24.5
72402	00	Z	100	29	0	33.8	58.1	47.3
72402	12	Z	100	30	0	11.7	65.2	64.1
74494	00	Z	100	29	0	11.3	22.6	19.5
74494	12	Z	100	31	0	9.1	9.1	-0.7
78016	00	Z	100	1	0	0.0	31.0	31.0
78016	12	Z	100	28	0	20.0	53.3	49.4

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DASAP3	12	Z	500	1	0	0.0	1.0	1.0
DBBH	00	Z	500	13	0	11.4	12.3	4.6
DBBH	12	Z	500	16	0	18.3	19.5	6.8
DBLK	12	Z	500	10	0	5.5	8.7	6.8
ELML7	00	Z	500	15	0	6.9	11.7	9.5
ELML7	12	Z	500	18	0	18.8	19.1	3.1
FNOR	00	Z	500	12	0	9.3	15.2	12.0
FNOR	12	Z	500	15	0	8.5	14.2	11.3
FNOU	00	Z	500	15	0	7.7	13.1	10.7
FNOU	12	Z	500	12	0	7.7	10.7	7.4
FNPH	00	Z	500	11	0	11.8	11.8	1.2
FNPH	12	Z	500	13	0	10.2	10.7	3.5
FNRS	00	Z	500	16	0	9.2	9.8	3.3
FNRS	12	Z	500	14	0	8.2	8.4	2.1
LDWR	00	Z	500	30	0	7.1	7.2	1.0
LDWR	12	Z	500	29	0	9.7	9.7	-0.5
OVYA2	00	Z	500	8	0	5.7	9.7	7.9
OVYA2	12	Z	500	8	0	8.0	10.2	6.3
OXYH2	00	Z	500	3	0	11.1	11.2	1.7
OXYH2	12	Z	500	2	0	16.5	16.5	-0.5
PACDG	00	Z	500	1	0	0.0	7.0	7.0
SHIP	00	Z	500	1	0	0.0	14.0	14.0
SWJS	00	Z	500	5	0	10.4	12.2	6.4
SWJS	12	Z	500	3	0	7.8	9.3	5.0
ZCBP6	00	Z	500	5	0	3.9	10.5	9.8
ZCBP6	12	Z	500	7	0	8.5	15.7	13.1
03953	00	Z	500	30	0	7.7	12.4	9.7
03953	12	Z	500	31	0	7.9	12.6	9.8
04018	00	Z	500	30	0	11.9	15.1	9.3
04018	12	Z	500	31	0	10.1	15.9	12.2
04220	00	Z	500	29	0	10.1	12.2	6.8
04220	12	Z	500	31	0	9.9	11.6	6.0
04270	00	Z	500	30	0	7.3	9.4	6.0
04270	12	Z	500	31	0	8.4	11.2	7.4
04339	00	Z	500	29	0	8.4	11.6	8.1
04339	12	Z	500	29	0	10.2	12.0	6.3
04360	00	Z	500	30	0	7.2	10.0	7.0
04360	12	Z	500	31	0	8.7	9.4	3.5
08001	00	Z	500	28	0	11.7	12.3	-3.7
08001	12	Z	500	30	0	13.9	15.3	-6.5
08508	00	Z	500	28	0	9.7	10.2	3.2
08508	12	Z	500	28	0	19.2	19.2	0.4
08522	00	Z	500	30	0	8.2	10.9	7.2
08522	12	Z	500	31	0	7.3	9.6	6.2
08594	12	Z	500	14	1	6.0	6.8	-3.3
60020	00	Z	500	28	0	9.3	10.4	4.7
60020	12	Z	500	31	0	10.8	11.9	4.8
71600	00	Z	500	30	0	8.6	8.9	-2.3
71600	12	Z	500	31	0	9.1	9.8	3.7
72201	00	Z	500	28	0	5.0	7.7	5.9
72201	12	Z	500	31	0	7.9	8.6	-3.3
72402	00	Z	500	29	0	18.1	19.7	7.7
72402	12	Z	500	30	0	6.4	10.9	8.8
74494	00	Z	500	30	0	9.2	9.6	2.4
74494	12	Z	500	31	0	7.8	7.8	1.0
78016	00	Z	500	1	0	0.0	2.0	2.0
78016	12	Z	500	29	0	18.8	31.7	25.6

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

```
 WMO   OBS              NUM    NUM      %
IDENT TIME ELM   LEV   OBS   GROSS    REJ     RMS    UBIAS    VBIAS

DASAP3 12    V    100     1      0      0     0.4    -0.1     -0.4
DBBH   00    V    100    13      0      0     2.6    -0.5      0.6
DBBH   12    V    100    12      0      0     2.4     0.1      0.2
DBLK   12    V    100    10      0      0     5.2    -0.3      0.4
ELML7  00    V    100    10      0      0     3.8    -1.6     -1.2

ELML7  12    V    100    20      0      0     6.0    -0.4      0.7
FNOR   00    V    100     9      0      0     4.5     2.6      0.1
FNOR   12    V    100    15      0      0     4.4     0.4      2.0
FNOU   00    V    100    13      0      0     4.5     0.4     -0.2
FNOU   12    V    100    11      0      0     3.5     0.0      0.7

FNPH   00    V    100     9      0      0     4.6    -1.2      2.2
FNPH   12    V    100     9      0      0     4.2     0.1     -1.1
FNRS   00    V    100    11      0      0     3.3     0.7     -0.7
FNRS   12    V    100     8      0      0     4.5    -2.5     -1.9
LDWR   00    V    100    30      0      0     2.0     0.3      0.2

LDWR   12    V    100    29      0      0     2.1    -0.2     -0.4
OVYA2  00    V    100     8      0      0     4.0    -1.8      0.1
OVYA2  12    V    100     7      0      0     3.1    -0.1      0.4
OXYH2  00    V    100     3      0      0     1.7     0.9     -0.3
OXYH2  12    V    100     1      0      0     3.2     1.8     -2.6

SWJS   00    V    100     5      0      0     4.9     1.3     -3.2
SWJS   12    V    100     3      0      0     4.9    -1.2      0.2
ZCBP6  00    V    100     5      0      0     3.2    -0.4      1.1
ZCBP6  12    V    100     5      0      0     2.7     0.8     -0.6
03953  00    V    100    29      0      0     2.4     0.2     -0.5

03953  12    V    100    28      0      0     2.6    -0.2      0.0
04018  00    V    100    27      0      0     2.7     0.5     -0.1
04018  12    V    100    30      0      0     3.0     0.4      0.6
04220  00    V    100    29      0      0     2.7    -0.1     -0.2
04220  12    V    100    31      0      0     2.8     0.2      0.0

04270  00    V    100    30      0      0     2.8    -0.1      0.0
04270  12    V    100    31      0      0     2.5     0.5     -0.3
04339  00    V    100    25      0      0     4.5     0.4     -0.5
04339  12    V    100    27      0      0     4.6    -0.7      0.5
04360  00    V    100    29      0      0     2.6    -0.1     -0.1

04360  12    V    100    30      0      0     2.1     0.2      0.0
08001  00    V    100    25      0      0     3.9     2.1     -0.3
08001  12    V    100    26      0      0     3.9     0.0     -0.9
08508  00    V    100    18      0      0     3.4     1.6      0.6
08508  12    V    100    15      0      0     4.2     0.5      0.1

08522  00    V    100    29      0      0     3.6     0.4      0.8
08522  12    V    100    28      0      0     3.6     0.3      1.2
08594  12    V    100    15      0    100     4.3    -1.1     -1.3
60020  00    V    100    27      0      0     5.7     2.0      0.5
60020  12    V    100    28      0      0     5.3     1.3      1.0

71600  00    V    100    30      0      0     3.0     0.4      0.1
71600  12    V    100    31      0      0     3.5     0.8      0.4
72201  00    V    100    28      0      0     3.3    -1.0      0.9
72201  12    V    100    30      0      0     3.5    -0.7     -0.4
72402  00    V    100    29      0      0     4.3     0.2      0.0

72402  12    V    100    29      0      0     4.0     0.1     -0.3
74494  00    V    100    29      0    100     2.5     0.0     -0.8
74494  12    V    100    31      0    100     2.3     0.4      0.4
78016  00    V    100     1      0      0     2.4    -1.7      1.7
78016  12    V    100    27      0      0     4.9     0.6      0.7
```

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DASAP3	12	V	500	1	0	0	2.0	-1.8	-0.9
DBBH	00	V	500	13	0	0	2.7	-0.5	1.2
DBBH	12	V	500	16	0	0	4.5	-1.1	-1.4
DBLK	12	V	500	10	0	0	3.1	-0.2	-0.7
ELML7	00	V	500	13	0	0	4.8	-0.8	0.7
ELML7	12	V	500	19	0	0	3.0	-0.2	-0.1
FNOR	00	V	500	9	0	0	5.2	-0.3	-0.9
FNOR	12	V	500	13	0	0	3.6	-0.5	1.1
FNOU	00	V	500	15	0	0	4.9	-1.2	-0.2
FNOU	12	V	500	11	0	0	3.3	1.3	-0.1
FNPH	00	V	500	7	0	0	5.0	-0.5	3.0
FNPH	12	V	500	9	0	0	2.8	-0.4	1.3
FNRS	00	V	500	12	0	0	3.2	-0.4	-0.3
FNRS	12	V	500	9	0	0	6.0	-0.3	0.7
LDWR	00	V	500	30	0	0	3.4	0.1	0.6
LDWR	12	V	500	29	0	0	4.3	0.3	0.0
OVYA2	00	V	500	8	0	0	5.1	2.1	1.9
OVYA2	12	V	500	7	0	0	4.4	2.1	0.9
OXYH2	00	V	500	3	0	0	2.1	1.3	-1.1
OXYH2	12	V	500	1	0	0	5.0	-2.2	4.5
SHIP	00	V	500	1	0	0	3.7	1.9	-3.2
SWJS	00	V	500	5	0	0	6.2	-0.7	-0.9
SWJS	12	V	500	3	0	0	7.3	-3.4	3.7
ZCBP6	00	V	500	5	0	0	3.8	2.0	-0.9
ZCBP6	12	V	500	6	0	0	3.0	0.1	-0.4
03953	00	V	500	29	0	0	3.1	-0.4	0.0
03953	12	V	500	29	0	0	3.7	0.2	0.1
04018	00	V	500	30	0	0	4.4	1.9	-0.8
04018	12	V	500	30	0	0	4.0	1.7	0.7
04220	00	V	500	26	0	0	5.2	0.1	-0.1
04220	12	V	500	29	0	0	4.1	0.8	-0.4
04270	00	V	500	30	0	0	3.8	0.7	1.2
04270	12	V	500	31	0	0	4.5	0.0	0.3
04339	00	V	500	28	0	7	7.4	-2.2	-1.5
04339	12	V	500	28	0	0	5.4	-1.2	-0.2
04360	00	V	500	29	0	0	3.7	-0.5	-0.2
04360	12	V	500	31	0	0	3.5	-0.4	-0.5
08001	00	V	500	28	0	0	4.6	1.5	-0.1
08001	12	V	500	28	0	0	3.3	0.1	-0.1
08508	00	V	500	18	0	0	5.0	1.4	0.2
08508	12	V	500	16	0	0	4.6	-0.5	0.5
08522	00	V	500	29	0	0	2.5	0.4	0.0
08522	12	V	500	30	0	0	3.4	0.2	0.8
08594	12	V	500	17	0	100	4.3	-1.7	-1.2
60020	00	V	500	26	0	0	2.9	1.0	0.0
60020	12	V	500	29	0	0	4.3	-0.2	-0.4
71600	00	V	500	30	0	0	3.6	0.4	-1.0
71600	12	V	500	31	0	0	3.5	-0.1	0.0
72201	00	V	500	28	0	3	4.5	0.0	-1.0
72201	12	V	500	31	0	0	2.7	-0.6	-0.3
72402	00	V	500	28	0	0	3.1	-0.4	0.0
72402	12	V	500	28	0	0	3.1	-0.5	0.3
74494	00	V	500	29	0	100	3.4	0.5	-0.1
74494	12	V	500	31	0	100	3.7	-0.5	0.4
78016	00	V	500	1	0	0	2.4	2.2	0.9
78016	12	V	500	29	0	0	4.0	0.8	0.4

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45